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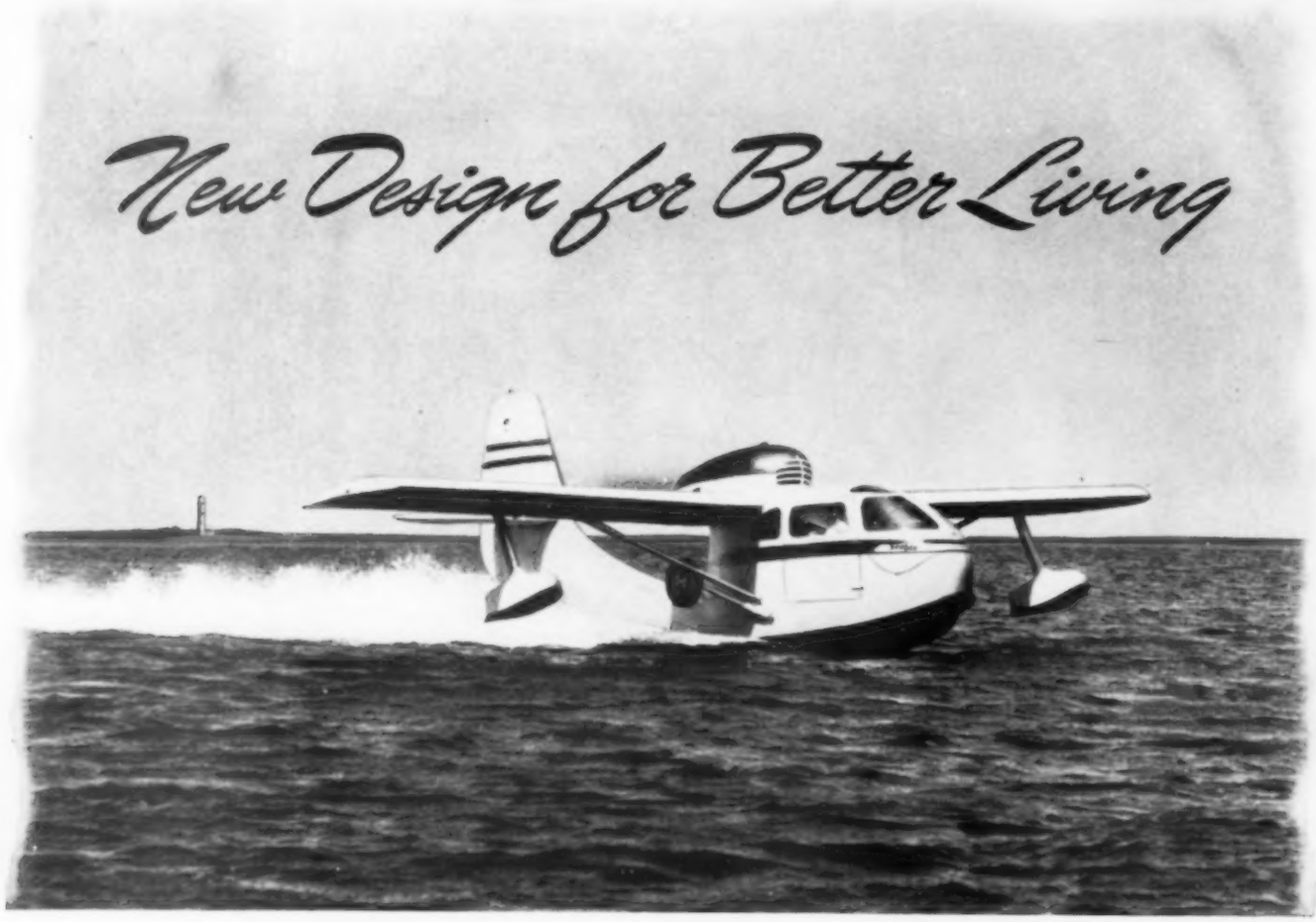

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Your copy of "Landings Unlimited" sent free. It stresses modest operating cost and performance specifications. Address Blue Ribbon SEABEE Dealer nearest you, or write the Personal Plane Division, Department 25C, Republic Aviation Corporation, Farmingdale, Long Island, New York . . . . .

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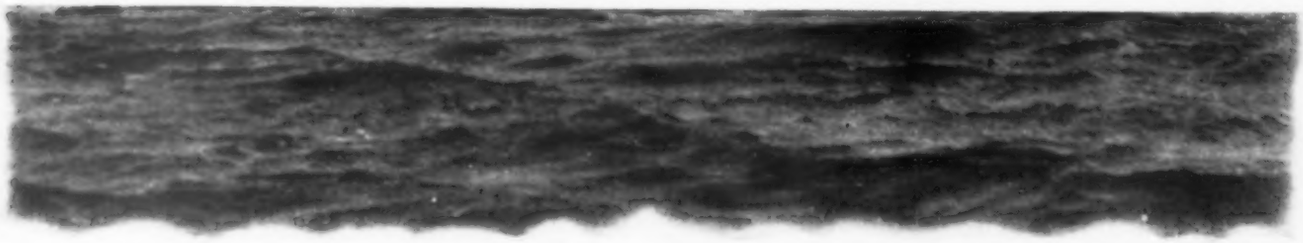

A GOOD "POINTER" FOR ANY PILOT!

■ That's the *pointer* on the Sperry Automatic Radio Direction Finder . . . the pointer which gives the pilot *automatic* and *continuous* bearings regardless of the heading of the plane. Once tuned to the desired broadcast or range station, this Direction Finder, unaided, fixes on the station heading so the pilot can set his course and *fly the pointer home.*

■ Flight problems are further simplified because this super-sensitive instrument gives the pilot non-ambiguous bearing indications, and simultaneous headphone reception. In the teeth of hard rain, dust, snow, or other severe conditions, static-free reception is maintained through the use of *shielded* crossed loops.

■ The non-hunting pointer indicates the correct bearing regardless of rapid plane maneuverings or turbulent air effects . . . there is no overshooting of the pointer. This unerring pointer indication, added to extremely high pointer speed, enables the pilot to correct drift instantaneously on the slightest change in course.

■ The Sperry Automatic Radio Direction Finder comes in single and dual types. Equipment includes a self-contained power supply . . . 12- or 24-volt operation is made available by throwing one switch on the receiver. Remote bearing indications can be used, if desired. Available for immediate delivery.

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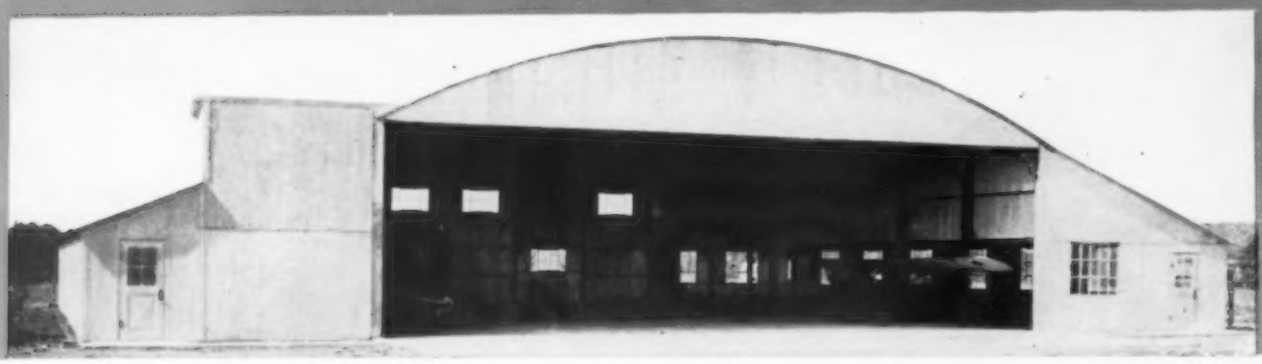

Funk Aircraft Company and the Jensen Manufacturing Company selected this Erwin-Newman Prefabricated Sectional Steel Hangar for their private field at Coffeyville, Kansas. It has proved economical and efficient for both flight service and storage.

ERWIN-NEWMAN Prefabricated Sectional Steel Hangars are made in all sizes and types. Throughout the country they are paying big dividends wherever efficient management and increased traffic calls for hangars that are:

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You get a hangar of the exact type and size you need without the usual expense of "custom tailoring," since each building is made up of quantity-produced standard sections.

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You save the costly weeks and months of delay often encountered in conventional construction, because sections are prefabricated in the factory and are quickly assembled on the jobsite.

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You build to suit your present needs, because future enlargement of an Erwin-Newman hangar is merely a matter of bolting in additional sections to the required dimensions.

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The standardized designs and modern prefabrication offered in Erwin-Newman Sectional Steel Hangars and Buildings set the pace in long-range airport planning.

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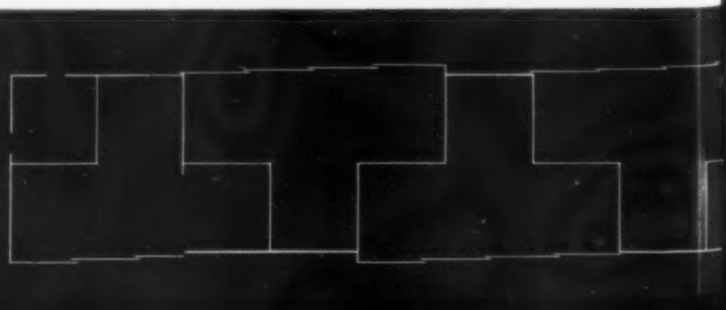
Airport planners with vision are finding the ERWIN-NEWMAN Nested-Tee Hangar, lower left, the exact answer to growing demands for economical and practical housing for private planes. The floor plan shows the very efficient method of utilizing ground space, with an individual stall for each ship entirely separate from the others.



REVVING UP

ARRESTING GEAR FOR LIGHTPLANES: Studies should be made for utilization of catapult-assist and cable arresting gear devices to facilitate use of small fields for personal planes, Grover Loening, consulting engineer for NACA, said in an address last month at the Institute of Aeronautical Sciences Third Annual Light Aircraft Meeting in Detroit. Other speakers outlined necessary lightplane refinements, of which noise elimination received chief emphasis. Two NACA experts, Dr. Theodore Theodorsen and Arthur A. Regier, said a 50 per cent noise reduction can be foreseen and predicted an 80-90 per cent reduction as being possible. A fan type propeller with many blades and low tip speed will be required. Wolfgang Langewiesche, well known writer and Kollsman Instrument research pilot, asked engineers to develop an airplane so spirally stable that, with controls free, it would positively straighten out from a turn and continue straight ahead. He said it should be possible to build in "stick feel" so accurately that a lightplane could be flown blind without instruments. A discussion of the meeting's highlights will appear next month in the new SOUTHERN FLIGHT feature, *Strictly Technical*, by George F. McLaughlin, inaugurated in this issue on page 10.

NEW PLANES: A new principle of ducting pressurized air from a nose scoop to actuate control surfaces is used by Rohr Aircraft Corp., of Chula Vista, Calif., in a radical design for a canard-type 2-place, 2-control, all-metal lightplane. It is a small egg-shaped pusher with tricycle landing gear. The stabilizer is out front on the nose scoop and vertical stabilizers are on the wing tips. Power and performance data have not been revealed. . . . Described as an "auto-plane," the "Dansaire Coupe" has been announced by the Dansaire Corp., of Dansville, N. Y.—a new lightplane seating three persons side by side. Features claimed by the firm include: Double tapered wing design; riveted aluminum alloy tube fuselage structure of three-longeron construction; rudder pedals which "come up through the floor boards as in an auto;" "Torkalized" landing gear; flaps, aileron, elevators and rudder of straight, untapered sections permitting right and left units to be interchangeable; 100-mph. cruising speed. . . . A speed range of 0 to 550 mph. has been claimed for a new Navy fighter, the Vought XF5U-1, which looks like a flying pancake and has the ability, when standing on its tail, to "hover in midair on its propellers like a helicopter." Hovering is possible with the use of gas turbine power plants. New-type Hamilton Standard propellers are used to achieve the wide speed range. . . . Republic's Seabee amphibian was NC'ed on July 1. . . . The Mars Manufacturing Co., Le Mars, Iowa, has obtained an NC for its 2-place Model MI-80 monoplane powered by a Lycoming engine.

FLIGHT ROUNDUP: Airmail poundage has dropped almost fifty per cent from last year's volume. Legislation for 5-cent airmail has already passed by the House. . . . A bill to exempt aircraft taxi operators from the 15 per cent U. S. transportation tax has been offered in the Senate. The exemption would apply if the taxi plane seats less than ten persons. . . . Two well-known personal aircraft sales executives have become distributors—Alfred B. Bennett, former sales director for Aeronca Aircraft Corp., has been named distributor for Aeronca planes in New York's metropolitan area, and James C. Welsch, former personal planes sales manager for Consolidated Vultee, has organized his own Personal Airplane Sales Corp., at 147 W. 42nd St., in New York, for the distribution of Cessna aircraft. . . . President Truman sided with the Army Air Forces in his recommendations to Congress last month asking for unification of the armed forces through establishment of a single department of defense. One of his requests was that the Navy be deprived of land-based aircraft. . . . Enlargement of Continental Motors' production capacity by 66 per cent is contemplated in a $12,000,000 financing program revealed by President C. J. (Jack) Reese.

SOUTHERN

Flight

Including MODERN AIRPORTS

Thirteenth Year of Progress With Aviation

JULY, 1946 VOL. XXVI. NO. 1

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The Birdmen's Perch

By *Major Al Williams*, ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

Did we ever mention that we're fond of aviation?

And all its wonderful people?

Like the wonderful engineers who perfected the Navy's wonderful counter-rotating props. But discovered that the two propellers created a stroboscopic effect—a line traveling slowly in the opposite direction to the aft propeller, for instance—which made the oldest and most expert pilots dizzy, green, and disinterested.

And the wonderful gal (an honest-to-goodness female woman of the opposite sex!) who plunked down $1250 and flew away a surplus P-38! *Repeat: P-38!*

And the wonderful laundry that picks up and delivers laundry and dry cleaning twice a week, *by plane!*

And the wonderful Baltimore pilot who put an automobile horn on his plane to summon airport attendants when he wants attention!

Yessir, we love every wonderful one of 'em!

We also love the wonderful Alchlor Process that makes Gulfpride the wonderful lubricant it is.

You probably know that we tack on this additional refining step after the oil has already been refined. Maybe because of that, you've wondered if it really made a great deal of difference in the long run . . . even though we've told you that the Alchlor Process *does* get extra carbon and sludge formers out of Gulfpride.

Well, sir, when we Alchlor-Process 10 quarts of the oil we've already refined by conventional methods—we take out a whole quart and a half of impurities, leaving only 8½ quarts of Gulfpride oil!

See why you get better lubrication with wonderful Gulfpride Oil?

SANI-SOIL-SET . . . PART 2

We were telling you last month about Gulf Sani-Soil-Set which makes dust lay like linoleum.

And we hadn't finished.

You know what a dirt port can be like with someone running up an engine and the wind blowing the wrong way, don't you?

Well, with Sani-Soil-Set on the ground, that doesn't happen! Water sprinkling is eliminated, cleaning and dusting inside buildings is minimized and so is frequent resurfacing of the field due to "blow away."

And a single application of this dust-laying agent often lasts a whole year. It doesn't evaporate. It doesn't wash away during rains.

Want some more information? Drop us a card.

LITTLE KNOWN FACTS DEPT.

Here's another month gone by with no Senior Grade Perch Pilot in The Little Known Facts About Well Known Planes Department.

Meanwhile, here are the new Perch Pilots (bottom rung) and the "Facts" that won them their rank:

Stewart Hartshorn (P-97507), 250 Fifth Ave., N. Y. C., is now a Perch Pilot because:

"World War I bombers used shade rollers and shade cloth as 'bomb chamber' doors. They were operated by the pilot and designed to reduce wind resistance after bombs were dropped through the paper bomb bay covers!"

How about that?

And William Murphy, 184 Ferry Street, Malden 48, Mass., is now a Perch Pilot (br) because he discovered:

"It takes 5 minutes longer to fly from Boston to New York than it does to fly from New York to Boston, according to airline schedules. Reason: Prevailing winds!"

Okay, now you try. Yes, YOU!

Mail your "Fact" to the address above.

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--SAKE GET 'EM CLEANED AND STOP WASTING THAT MAGNIFICENT HERO OF THE OCTANES
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When writing, please mention the type plane you have or expect to purchase and its engine model number.

• Pilots throughout the country are excitedly inquiring about the McCauley Met-L-Prop, the new lightweight, aluminum propeller. And no wonder . . for it is the first and only metal propeller ever manufactured for personal planes. Here, at last, is a propeller that is light, efficient and durable . . it will not swell, crack or warp. Its greater Durability will outlast all other types of propellers. Rain is no handicap . . . there's no waiting for the propeller to dry. More important, too, Met-L-Prop produces greater performance. Its light, thin-sectioned blades develop maximum horsepower and there are no mechanical parts to become out of adjustment. Met-L-Prop is available now for Continental A65, A75, C75 and C85 engines. CAA approved No. 842. Write today for complete information or see your local dealer or distributor.

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HANGAR FLYING

LOCKHEED

The Wet Load

The first cargo carried by the *Constellation* was put aboard via a four-inch fire hose. It consisted of 8.8 tons of water. This doesn't sound like a very intelligent choice of payload, but under the circumstances it was.

When Lockheed engineers first took No. 61 (the test *Constellation*) into the air, they wanted to know how the ship reacted to shifts in its center of gravity. So they originated and installed a system of water ballast tanks. The interior of the cabin looked like a cross between a hardware store and an aquarium.

By merely turning various valves, engineers could shift a ton or two of load from here to there in flight. Much easier than lugging sandbags around, and a lot more accurate. And since flight test costs on the *Constellation* ran to about $6200 an hour, the system more than paid for itself by speeding up the whole test program.

This rig, another example of the old Lockheed moxie, proved to engineers that the *Constellation* is a remarkably stable plane. More so, in fact, than any other large transport.

L to L for L

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AIR Report

Lightplane Industry Moving Into Southwest

Two more leading manufacturers of personal airplanes plan establishment of factories in the Southwest. Piper Aircraft Corporation and Taylorcraft Aviation Corporation are both negotiating for assembly plants in Oklahoma. W. T. Piper explains his firm needs immediate action to supply expanding demand for Piper planes in the Southwest, and Nash Russ, president of Taylorcraft, declared he is negotiating for a plant at Fresno, California, as well as in Oklahoma.

★ ★ ★

Uncertainty for Non-Scheduled Carriers

The outlook is extremely bleak for an early solution to the many problems surrounding economic regulation of uncertificated air carriers. With more than 90 per cent of all uncertificated companies operating in violation of the 1938 Civil Aeronautics Act, the situation poses the most difficult dilemma in CAB history. Long, drawn-out hearings will precede granting of certificates. Months of argument will be required before a workable formula is developed. With CAB already bogged down, observers close to the Washington scene predict little progress before 1947. Most urgent demand at this time is for a clarification and possibly a revision of the non-scheduled exemption order issued when the present act was passed in 1938 so that CAB machinery can catch up with the maze of work created by pressures from unprecedented and unforeseen postwar air carrier expansion.

★ ★ ★

Air Reserve, National Guard Plans

With scores of thousands of veterans anxiously awaiting details, the Army Air Forces have allowed month after month to pass without issuing definite plans for utilizing this valuable pool of air defense strength. Late last month the high command finally got around to releasing some sketchy details. The Air Reserve will be administered by the Air Defense Command, which will include the Air National Guard, still in the planning stage. There will be "active" and "inactive" reserves. The Air Defense Command is offering allocations to each state for the Air National Guard. Activation of this program, primarily the fighter and light bomber training of the reserves, will depend on acceptance by the individual states and the filling of personnel quotas. The AAF has earmarked 2,664 airplanes for the Air National Guard, including 1,000 P-51's, 800 P-47's, 168 AT-6's, 196 A-26's, 236 A-26 tow targets, 168 L-5's and 96 C-47's.

★ ★ ★

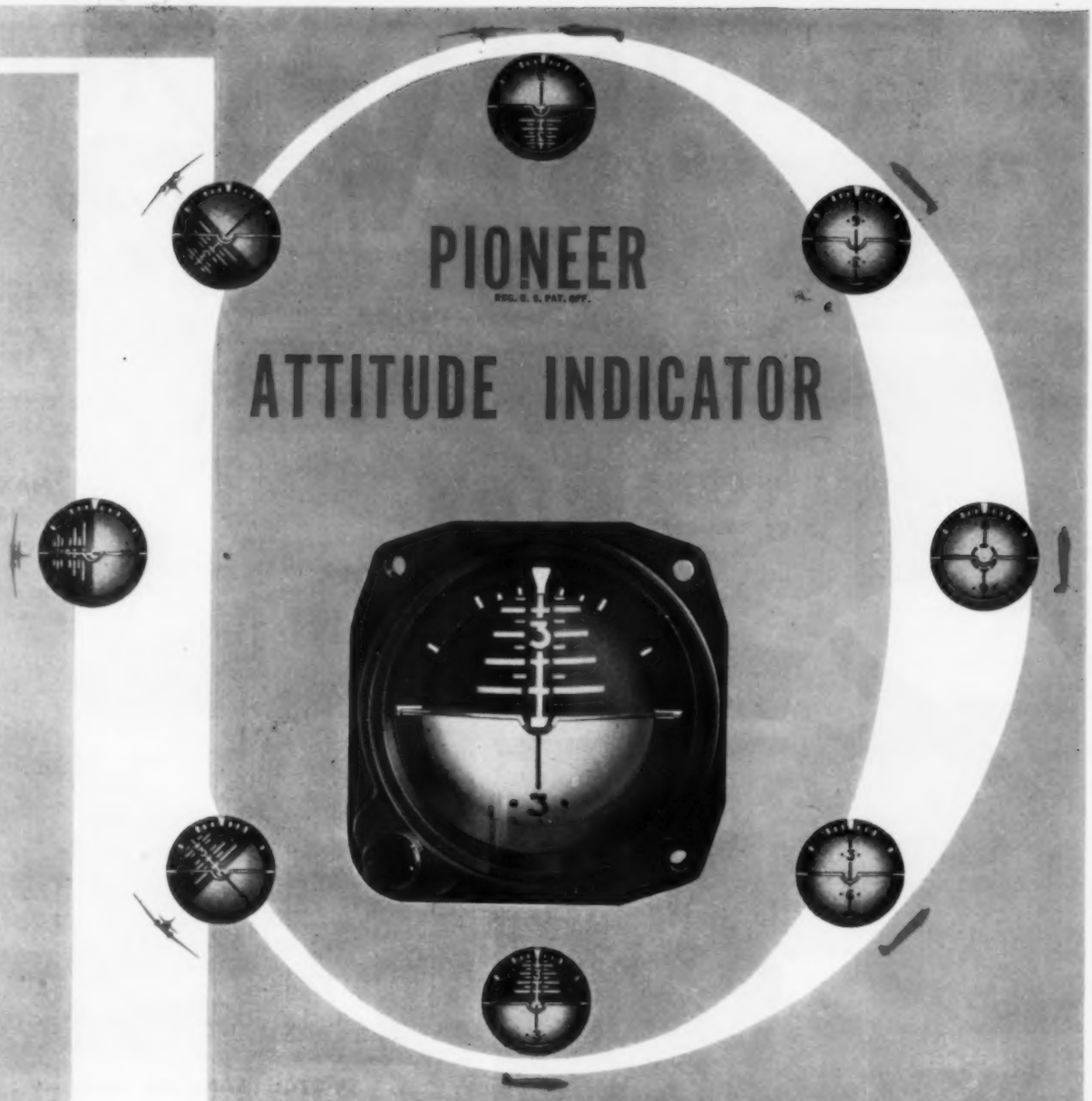
Short Snorts

Beech Aircraft Corporation's secret new 20-passenger Model 34 feederline transport, which has aroused much interest abroad as well as in the U. S., is a unique two-propeller, four-engine design. The engines, in buried installations, are mounted in pairs, each pair driving a single propeller. . . . Now that two-place airplanes are reaching the market in substantial number, the pressure is growing on four-place designs, and engine manufacturers and CAA have been getting the rush act for a speed-up of deliveries of 150, 185, 215 and 220 hp. flat engines. . . . Bellanca resumed production of its four-place, 150-hp. Cruisair late in June and was expected to deliver twenty-five during July. A strike had forced cessation there. . . . An average ground speed of 140 mph. was recorded by North American's Navion on a nationwide tour just completed by Ronald Burla, assistant to the president in charge of sales, and Bob Chilton, assistant sales manager. . . . Public complaint against airplane nuisance flying and noise has the old timers now officially connected with local and state aviation departments viewing the situation with alarm. Unless all operators, pilots, students and plane owners change their ways, many airports will be closed down and great difficulties encountered in establishing new ones. . . . There is a possibility of the Air Power League's affiliation with the National Aeronautic Association. . . . Walter H. Beech will leave soon for Europe and on his return is expected to announce arrangements with Fokker Aircraft Works in the Netherlands under which Fokker would be licensed to manufacture Beechcrafts in Holland.

PIONEER

REG. U. S. PAT. OFF.

ATTITUDE INDICATOR



provides a continuous combined pattern of attitude indications through 360° of both roll and pitch

The Pioneer Attitude Indicator is designed to provide continuous positive indications regardless of the aircraft's attitude. In trimming accurately for straight and level flight, even the slightest changes from desired attitude are clearly indicated by movements of the dial against the reference marks.

Readings are made as a combined pattern of pitch and bank, rather than as separate readings. The Pioneer Attitude Indicator has a special gimbal arrangement which offsets gimbal lock effect, making this Indicator a truly non-spillable gyro—with long service life—as proved by millions of dependable operational hours in aircraft the world over. Operates on 26 volts, 400 cycle current, drawing only .18 amperes.

Pioneer Instruments

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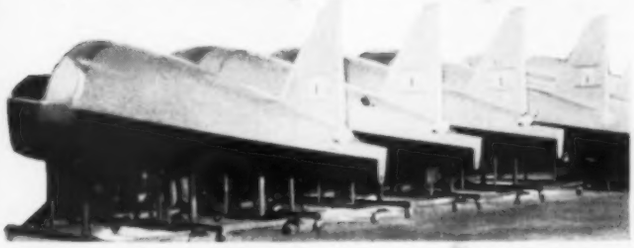

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Editorials and Comment

STARVATION DIET

THERE is no way of knowing how many fatal accidents have resulted from collision of aircraft with birds in flight. Rare is the pilot who hasn't at one time or another barely missed a soaring buzzard, a high flying swallow or perhaps a mallard duck. But the average airman gives little thought to this very real hazard, which up until recently was nobody's problem.

The NACA hasn't bothered about it, nor the airlines nor any privately endowed research agency. There are too many other jobs to be done.

The problem of collision with birds in flight has been picked up, interestingly enough, by the Civil Aeronautics Administration, and substantial progress is being made at the Indianapolis Experimental Station. They have rigged up a conventional airplane cabin in front of a long gun-like barrel which "shoots" dead chickens at the windshield under terrific pressure by means of compressed air. Their goal —impact-resistant windshields.

We mention this relatively small but highly important technical development work to illustrate, first, that unless many agencies are engaged in this type of practical research a large number of problems will go unsolved, and second, there's a definite place for the CAA in specialized technical developments, particularly from the civilian airman's standpoint.

Every severe critic of the CAA should make a special point to visit the Indianapolis installations. They would see work devoted to crash-resistant fuel tanks, high-intensity runway lights that don't blind the pilot, fire protection studies covering detection, extinguishing and preventive design, VHF radio instrument landing and range system, including combination of instrument landing with automatic pilot, indicators which give the horizontal distance between aircraft and the radio range, vertical separation indicators as an anti-collision device, azimuth and distance range indicator to give altitude and identity to control towers, and service testing of ground controlled approach by radar.

The amazing factor about CAA's technical development work, aside from the fact that so few people know about it or appreciate the accomplishments, is the starvation diet and small number of people involved. Less than seven-tenths of one per cent of CAA personnel are engaged in technical development and they operate on a mere pittance. A 1946 appropriation of $892,000 would be cut down to $750,000 if the House Appropriations Committee recommendations are followed. We don't intend to make a comparison with the functions of the CAA's research work and that of the highly esteemed National Advisory Committee for Aeronautics, which also needs more funds, but in contrast the NACA received $26,014,000 for fiscal 1946. We wonder what the Russians are spending on aeronautical research.

It was interesting, though ironical, to observe a large number of people identified as aviation leaders recently knifing the CAA's proposal to warehouse some obsolescent spare parts and establish some limited maintenance facilities for their recently acquired surplus aircraft. All the while this fight was going on, hardly a hand was raised in defense of the CAA's request for funds to carry on vitally necessary functions during the new fiscal year.

It is little short of reprehensible that the industry consistently fails to study thoroughly and provide support to CAA appropriation requests. But it is particularly regrettable now that this situation exists, what with a transitional year of unprecedented civil aeronautics expansion coming up.

☆ ☆ ☆

TIME FOR ACTION

THE National Aeronautic Association, meeting this month in Omaha for its first big annual convention since 1941, has a chance to assume the position of leadership for which it was founded in 1922. Although NAA has lost some of the functions year by year to other groups, it has remained the focal point around which all can rally.

There never was a time when a united front in aviation was of greater importance. What other group or association can develop this united front but NAA?

The various trade associations, representing specialized segments of the industry, certainly can not. The Air Power League can not. That group was formed to fight for air supremacy by certain leaders of the industry who chose to start something new rather than use the machinery of NAA. The League has terminated its efforts to build a field organization and is in a tail spin.

Other groups have specific jobs and can not be expected to initiate joint efforts for aviation as a whole. Civil Air Patrol, the largest in point of numbers, has no ambitions beyond its quasi-military program for the AAF. The Air Force Association, for AAF veterans only, is groping for a function. AOPA, the Flying Farmers, UPMA and others are seeking to organize private fliers.

While relations between the national officers of most of the organizations are remarkably cordial, there are confusion, conflict and duplication of effort in the field. Programs are meaningless unless they produce results in the states and communities. That is where the united front must be aligned.

The characters in the fancy suites in New York and Washington are spending too much time and money on so-called educational activities to sell aviation to an American public already sold. The people are ready to throw in their support, but it has to be primarily on the local level. Here is where all organizations, including NAA, have fallen down.

In any area there may be a chapter of NAA, a unit of the Air Force Association, a Naval or Army air reserve unit, a CAP squadron, various flying and model clubs, private fliers association, aviation committee of the chamber of commerce and of the civic and veterans' groups, an unaffiliated aero club perhaps, and individuals who hold membership in yet other outfits.

If they all hold their meetings, make their own pronouncements, and issue their own publicity, the public is con-

(Continued on page 38)

Twin-Engine Lightplane with Centerline Thrust

SEVERAL interesting innovations are combined in an unusual light airplane designed by A. C. Johnson and H. W. Funke of Long Beach, California. It features twin engines mounted in tandem nacelles behind the passenger cabin, driving directly-mounted propellers above the full cantilever low wing. Its designers point out that the location of the engines permits the maximum of undisturbed lifting area of the wing; the head resistance of the double nacelle containing the two engines is no greater, or possibly less, than that required for a single engine. Each engine, of the horizontally-opposed cylinder type, is independent of the other. If either engine fails, the remaining engine continues to apply its thrust at the centerline of the plane; this eliminates the necessity for correcting the tendency to yaw which is inherent in all conventional twin-motored jobs when flying on one engine.

Since the forward engine drives a pusher propeller and the rear engine a tractor, the propellers are counter-rotating with no special gearing required to achieve this desirable effect. This engine placement results in offsetting the torque present in single engine installations, and permits turns to the left and right with equal ease.

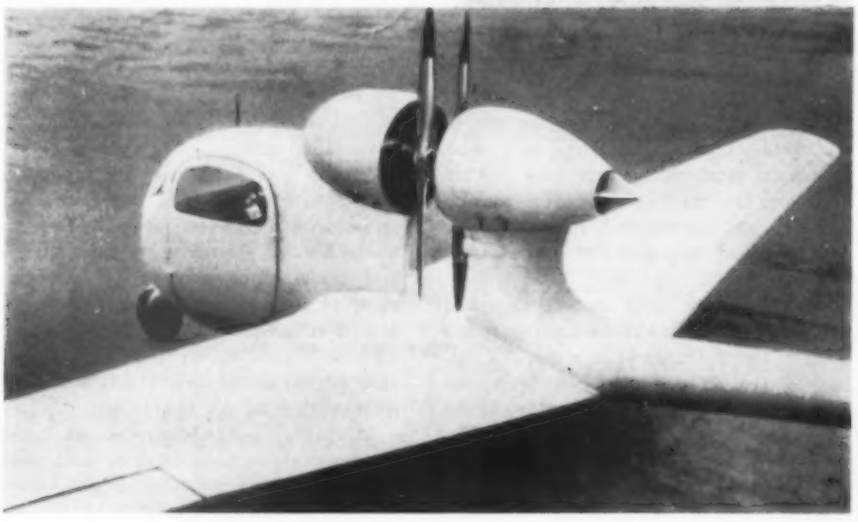
It might be noted that the Wright Brothers' original airplane had counter-rotating propellers which undoubtedly contributed considerably to the success of their 1903 "Flier." And, at the other end of the scale was the Italian Macchi-Castoldi 72 seaplane powered with twin engines and driving counter-rotating propellers; for many years it held the world's speed record at more than 440 miles an hour established nearly twelve years ago.

Promising Development

Although the basic principle of the tandem engine installation is not new, its practical application to the modern light airplane has considerable merit. Location of the propellers above the center of the wing means eliminating the hazard of whirling blades close to personnel while the engines are idling on the ground, as well as while the plane is taxiing.

Other good features are the unlimited forward visibility, the ease of access through the automobile-type door, the level position of the floor (only 20 inches from the ground) and the tricycle landing gear which permits take-offs and landings at level altitude. Exceptional maneuverability in flight is claimed because of the slim, bomb-like fuselage which, because of its circular cross section, offers but little resistance to forces imparted by the air controls. The close proximity of the propellers to the rudder and elevators makes the slipstream quickly responsive and effective on these control surfaces.

A cruising speed of 135 mph. and single-engine cruising speed of slightly over 100 mph. are claimed by A. C. Johnson and H. W. Funke of Long Beach, Calif., for their two-place design powered by tandem-mounted 80-hp. engines. It lands at 45 mph. Empty weight is 1,400 pounds, gross weight 2,000 pounds.



Propeller and engine noises, and fumes from the exhausts, are lessened by their placement aft of the cabin. The unobstructed view, particularly directly ahead, contributes to the ease of handling in flight and on the ground.

In production, the wings of this type of airplane may be made of plywood because of its low cost of construction and its ability to retain a smooth contour during flight.

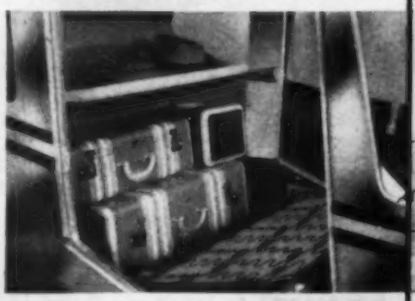
Based on the experience of the automobile, the airplane which will probably have the widest appeal to the private flier will seat three or four passengers in addition to the pilot. The designers of the new tandem-

Everyone who flies the 140 agrees . . .

CESSNA gives you *More for your Money*

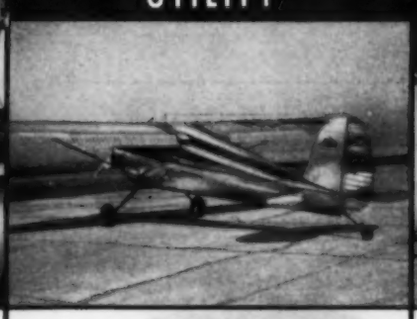
COMFORT

As One Veteran Flyer Says, "The 140 is more comfortable than most big planes I've flown." Roomy, adjustable seats and relaxed leg position take care of that.



You Can Take Ample Luggage for two people for ten days. There's room for 80 lbs.... 2 large suitcases and 2 brief cases or 3 suitcases... plus handy utility shelf.

UTILITY



Taxi in High Winds that ground most light planes. The 140's safety gear and steerable tail wheel make it safe. And the flaps can be set for any desired angle of glide.

A 5 Hour Maximum Range assures over 4½ hours or 450 miles nonstop flying in the 140. Top speed is over 120 m. p. h. and twin wing tanks carry 25 gallons of fuel.

SAFETY

The Patented Cessna Safety Landing Gear actually combats normal ground looping tendencies. It smooths out rough fields, and has no moving parts to rattle or wear.

You'd Never Think of driving a car that didn't have good, sturdy all-metal construction. That's equally important in an airplane. Another reason why Cessna's the buy.

Cessna Alone Gives You All These *High-Priced* Features In The *Low-Priced* Field

You be the judge. Just compare the sleek, fast, 2-place Cessna 140... feature for feature... with any other airplane at anything near its low price of only $3245 (F. O. B. Wichita). Or the Cessna 120... also with an 85 H. P. Continental engine, all-metal structure, man-sized hydraulic toe brakes, patented safety landing gear, and service ceiling of 15,500 feet... but without starter, generator, battery and flaps for only $2695 (F. O. B. Wichita). You'll discover for yourself that Cessna does give you more comfort, utility, safety and performance... *more for your money.*

CESSNA AIRCRAFT COMPANY, DEPT. SF, WICHITA, KANSAS

Cessna

THE PILOT'S AIRPLANE

ARMY E NAVY

FIRST PHOTO OF 6-ENGINE XB-36 shows the world's largest landplane bomber as it began taxi tests at the Consolidated Vultee Aircraft Corporation factory at Fort Worth. Flight tests are slated soon. Capable of carrying 5 tons of bombs 10,000 miles, the pressurized XB-36 is powered by six Pratt & Whitney 3,000-hp. R-4360 engines with pusher propellers, has a 230-ft. wing spread, a fuselage length of 163 feet and a crew of 15. Main landing wheels are 110 inches in diameter and are filled with helium instead of air. Transport version of XB-36 will have 16,000-gal. fuel capacity, double-deck cabin space for 400 troops, and commercial version will carry from 200 to 300 passengers. —(Convair Photo.)

engined airplane believe that a plane of this type and size with retractable landing gear, and powered by a pair of six-cylinder engines delivering 175 horsepower each, would have a cruising speed of 200 miles an hour.

★ ★ ★

Progress From War

PEACETIME technical research in the field of military aviation benefits many branches of commercial aviation. Accelerated developments forced upon us by the stress of our war needs now serve peacetime uses. To maintain our leadership in aviation we continue to explore the many new fields brought to light due to the war.

The NACA, the CAA, the AAF's Air Materiel Command and other agencies are engaged in extensive programs of research and development which have just been revealed to the public. During a 3-day press tour last month, the AAF at Wright Field demonstrated some of its top technical advances, together with some common yet immediately useful products developed there.

For example, the new "push-button" C-54 fully automatic (including take-off and landing) flying technique was shown. All-Weather Flying Center engineers devised push-button flight to permit scheduled operations regardless of weather.

This new development differs from the "robot" plane which is controlled by a pilot in a "mother" ship, since fully automatic flight is accomplished entirely by a system of automatic devices aboard the aircraft.

About the Author

GEORGE F. McLAUGHLIN, veteran aviation editor with over 30 years in the aviation industry, was technical editor of America's first aviation journal, *Aerial Age*, back in 1915, is a member of the Early Birds, Institute of Aeronautical Sciences and a charter member of the Aviation Writers Association. During World War I he was in charge of the Drafting Section, Technical Data Branch, Information Section, Army Air Corps. Later he was co-ordinator of lightplane design and construction for Ordnance Engineering Corp.; worked with Glenn H. Curtiss in his original company; was with LWF Engineering Co., as draftsman in charge of designing an Army transport, and assisted in designing a flying boat for Harold Vanderbilt. McLaughlin was editor of *Aero Digest* from 1929 to 1943. He is at present director of technical publications for McLaughlin-Carr Associates, well-known New York aeronautical research and engineering firm.

Those devices, which are pre-set to the desired flight plan, and set in motion by simply pressing a button, automatically control and navigate a four-engine Douglas C-54 cargo plane in its take-off, climb to altitude, flight to destination, landing and stopping on the landing strip after touching down. Landing gear and flaps are automatically retracted after take-off, radio tuned, power settings made, navigational headings corrected, gear and flaps extended for landing and, after landing, the brakes applied to steer and stop the plane—all without aid from a pilot. On the demonstration flight however, there was a pilot along "just in case" for, after all, the idea is still in the experimental stage. So you pilots shouldn't let your licenses lapse.

Supersonic Speeds Soon?

The first nation to break through aviation's supersonic speed barrier will race far ahead of the rest of the world in commercial as well as military flying. It may be the United States.

As of now aviation is pegged at the speed of sound, which is 1,100 feet per second, or about 760 mph., at sea level. Piloted aircraft have not attained that speed; airplanes have been disintegrated by sheer speed and its

(Continued on page 56)

RUDDER-ASSIST DUCTS TO AID SPLIT-FLAP RUDDERS AT WING TIPS are shown in this photo of Northrop Aircraft Corporation's XP-79B, a jet-propelled flying wing fighter which the pilot flies from a prone position. It is powered by two Westinghouse 19-B jet engines, has a 38-ft. wing and 14-ft. length, and is of welded magnesium construction. —(Northrop Photo.)

Eclipse Low tension Vibrator Coil

Provides intermittent high starting voltage with magneto protection

The Eclipse* Low Tension Vibrator Coil is an essential element of an aircraft engine starting system. It provides high magneto voltage during cranking period. An outstanding feature is the magneto protection it provides by grounding excessive current through an additional winding, in the event of frozen contacts.

Lightweight, simple and rugged in construction, it operates with a maximum current drain of 3½ amperes. Can be used in either 12 or 24 volt systems.

*REG. U.S. PAT. OFF.

Eclipse AVIATION ACCESSORIES

... REMEMBER—ECLIPSE SERVICE FOLLOWS THROUGH FROM DRAWING BOARD TO SKY

A DIVISION OF Bendix AVIATION CORPORATION

Eclipse-Pioneer Division • Teterboro, N. J. • Los Angeles 34, Calif.

THE LATEST PROPELLERS

for the Latest Aircraft

The new Consolidated-Vultee 240 and Martin 202 and 303 are the first of the new commercial air transports to be equipped with the latest in propellers — Hamilton Standard's new reversible-pitch Hydromatic with efficient square-tip, hollow-steel blades. Optional equipment includes the most accurate and dependable multi-engine synchronizer yet developed — another contribution to smoother and safer flight by Hamilton Standard Propellers.

HAMILTON STANDARD PROPELLERS

EAST HARTFORD, CONNECTICUT

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

For the "Swift Completion of their Appointed Rounds"

The mail goes through!

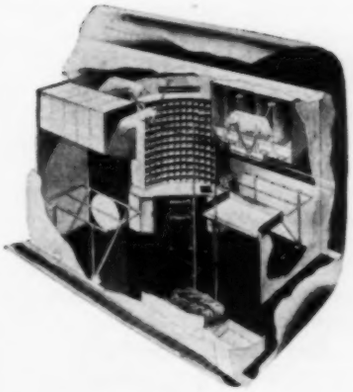
For "neither snow nor rain nor sleet nor gloom of night stays these couriers from the swift completion of their appointed rounds."—the creed of a great Government service.

"Swift completion" has become an increasingly important part of this service—and Air Mail has lent wings to the Post Office Department's traditional speed.

With characteristic imagination, Fairchild engineers now offer *new* wings for the mail. They have created an interior arrangement for the Packet that converts this cargo carrier into a *flying mail car*—a plane to carry air mail exclusively—and efficiently—*by the ton!*

It is the logical answer to the ever-increasing demand for mail by air. With its ability to use less-than-average length runways; carry heavy loads economically for long *or* short distances; to load and discharge cargo fast, the Packet is a transport to widen immeasurably the scope of Air Mail service—even to off-the-line points.

With the design for a flying mail car, typical Fairchild engineering ingenuity has again created the "touch of tomorrow in the planes of today"—converted the versatile Packet into a transport that anticipates the day when all first class mail will be sped toward its destination by air.



A LOOK INSIDE. This ingenious sorting section permits air mail clerks to sort mail *in flight.*

Fairchild Aircraft

Division of Fairchild Engine & Airplane Corporation, Hagerstown, Maryland

Magnaflux installation and other equipment at Northern Air Service

Aircraft Inspection with MAGNAFLUX* and ZYGLO*

Aircraft and engine inspection with Magnaflux is routine in Northern Air Service's Grand Rapids Airport shops — and business is good. So good, in fact, this progressive Michigan organization is now constructing a new airport to better handle the increase.

Business is going to be good at all overhaul stations offering private pilots the protection assured by inspection with Magnaflux and Zyglo. Flyers are men and women who respect not only their own safety, but the value of precisely machined, fine metal well-cared-for. They have learned that Magnaflux and Zyglo, in standard overhaul inspections, have proved they are dependable flaw-detectors. Their clear, visible indications are accurate guides to the first signs of fatigue and needed repairs.

And inspection with Magnaflux and Zyglo is also good business for operators, because it's fast, easy, low-cost . . . It is reputation protection—keeps pilots coming back. *Investigate today!*

* Magnaflux and Zyglo, trade-marks of Magnaflux Corporation, applied to its equipment and materials for magnetic particle and fluorescent penetrant inspection.

MAGNAFLUX CORPORATION
5906 Northwest Highway
Chicago 31, Illinois
New York • Detroit • Dallas
Los Angeles • Cleveland

Motion Seconded

Sirs:

I want to take this occasion to congratulate you on the editorial, *Dangerous Fever*. Such courage is what we need more of in this business.

I happened to be at the air show (I don't know why) held at White Rock Airport a couple of Sundays ago and two Cubs came together, fatally injuring the pilot and passenger in one of them. This sort of thing is happening all over the United States now and I hope that some of the other leading editors will take the same position.

LEE H. SMITH, Sales Manager
Fairchild Personal Planes Division,
Fairchild Engine & Airplane Corp.
Dallas, Texas

Management Partner Sought

Sirs:

I am much interested in the fine effort your magazine has been making to improve operating conditions at small airports throughout the South.

Because of the attention you have given to this matter, I thought you might know of an individual or group of individuals who might be interested in joining with me in financing and operating an airport along the improved lines your articles have suggested.

WILLIAM GOADBY POST
188 Glenwood Road,
Englewood, New Jersey

★*Reader Post, 25, married and father of two children, graduated from MIT in 1943 with a B.S. in engineering and business administration. In 1940 he graduated from Boston and Maine Airways (now Northeast Airways) airline pilot training course with a CAA Instrument Rating and studied aero engineering in 1943 at the Naval Training School, Cal Tech. During Sept., 1943-March, 1944, he served in the Navy as administrator, Gunnery Section, Special Devices Division, Bureau of Aeronautics; from March, 1944, to June, 1945, he was engineer in charge of all rocket projects for Special Devices Division, and from June, 1945, to March, 1946, he was assistant head and later head of Administration Branch, Special Devices Division, after its incorporation in the Office of Research and Inventions, duties including supervision of all administrative work of the Division, which had a 1946 budget of forty million dollars. He was released from active duty last April. Post has held a private pilot's license since 1939, owned a Luscombe until 1943 and expects delivery of a Seabee he has ordered. He is willing to work anywhere in the U. S. or abroad.*—ED.

Service Appreciated

Sirs:

I am one of the oldest pilots in Texas and have covered many airports in the United States. Just by accident last Sunday my wife and I, returning from West Texas, dropped in at a new airport owned by the City of Graham.

The runways were mowed. In taxiing up to the gasoline pump, we were welcomed by a young man and his wife whose names, I regret, I do not remember. They escorted us to a nice clubhouse which is a part of their dwelling. It was delightfully cool with nice comfortable chairs. We were offered coffee and cold Coca-Colas by the little hostess. The rest rooms were extremely nice. They advised us that all air travelers could stop at their airport and get meals of the very best at all hours and at reasonable prices. And believe it or not, the windshield on the plane was actually cleaned off for the first time in fourteen stops at various airports.

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Second Assistant Postmaster General
Washington, D. C.

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ALFRED K. YOUNG.
Oklahoma City, Okla.

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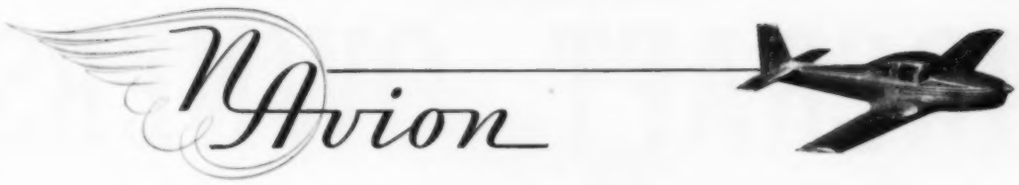

FOR USEFUL LOAD

Carries over half a ton of everything you need...

The *Navion* gives you practical wings on which to greet the Air Age. The owner-pilot can carry three additional persons and 80 lbs. of luggage. For business use, two people may fly with 435 lbs. of cargo—a bulk load of 46 cubic ft. Fully loaded with *four* people, cargo, fuel, and all extra equipment, the *Navion* delivers high performance. At 75% normal rated horsepower, the *Navion's* fully-loaded range, speed, and economy are setting the pace for all other four-place planes. Write today for details of the all-metal *Navion*. Address Dept. O-3, North American Aviation, Inc., Inglewood, California. Deliveries now being made. Standard Model—$6,100 f.a.f.*

**Plus Calif. State Sales Tax*

Designed and built by

NORTH AMERICAN AVIATION INC.

CREATORS OF THE FAMOUS P-51 MUSTANG

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**Plus Calif. State Sales Tax*

Designed and built by

NORTH AMERICAN AVIATION INC.

CREATORS OF THE FAMOUS P-51 MUSTANG

AIRCRAFT OWNERS

PARTS FOR YOUR SURPLUS PLANE NOW ARE AVAILABLE NEAR YOU!

Fifty-nine aviation firms have been appointed by the War Assets Administration as agents for the "package" sale of surplus aircraft parts, components, and hardware. They now can supply you with many of the parts that you need to keep flying.

Chosen for their experience and technical "know-how", they are located at strategic points throughout the country to make it convenient for you to fill your needs, and to see what you buy. Many of these are firms with whom you usually deal.

Large quantities of parts have been shipped to WAA agents and new supplies are going out daily.

SEE THEM FOR YOUR NEEDS. THE PRICE IS THE SAME...WHETHER YOU BUY FROM AN AGENT OR DIRECT FROM WAA

If the agents do not yet have what you want, write direct to the Office of Aircraft Disposal, War Assets Administration, Washington 25, D.C. Your order will be given prompt attention.

This is a complete list of WAA Authorized Agents for the sale of aircraft parts:

COMPONENTS:

Aircraft Components Corp.
213 King Street
Alexandria, Virginia

Brayton Flying Service, Inc.
Lambert-St. Louis Airport
St. Louis 21, Missouri

Dothan Aviation Company
Municipal Airport
Dothan, Alabama

Florida Aviation Corp.
CAA Station No. 385
Municipal Airport
St. Petersburg, Florida

Grand Central Airport Company
P.O. Box 1315
Glendale 5, California

The Kratz Corporation
Kratz Airport
St. Louis 21, Missouri

Resort Airlines, Inc.
Box 1301 (Southern Pines Airport)
Southern Pines, North Carolina

Southport Aero Service
Rosemount, Minnesota

Thompson Aircraft Products Co. Inc.
23555 Euclid Avenue
2196 Clarkwood Road
Cleveland 17, Ohio

Lynchburg Air Transport & Sales Co.
Preston Glean Airport
Lynchburg, Virginia

Maxwell Associates, Inc.
15 Moore Street
New York 4, New York

New Mexico Aircraft Sales, Inc.
West Mesa Airport
P.O. Box 157
Old Albuquerque, New Mexico

Northwestern Aeronautical Corp
1902 W. Minnehaha
St. Paul 4, Minnesota

Piedmont Aviation, Inc.
Smith Reynolds Airport
Winston-Salem 1, North Carolina

Pyrometer Service Company
228 River Road
North Arlington, New Jersey

Briggs Weaver Machinery Co.
309 N. Market Street
Dallas 2, Texas

Simsbury Flying Service
Simsbury, Connecticut

Spartan Aircraft Company
6900 East Apache
Tulsa, Oklahoma

Toth Aircraft & Accessories Co.
220 Richards Road
Municipal Airport
Kansas City, Missouri

AIRFRAME PARTS:

Aircraft Steel & Supply Co.
415-425 N. Water Street
Wichita 1, Kansas

Douglas Aircraft Company, Inc.
Santa Monica, California

Piper Aircraft Corporation
Lock Haven, Pennsylvania

The Ryan Aeronautical Company
Lindbergh Field
San Diego 12, California

HARDWARE:

Aero Bolt & Screw Co.
1815 Webster Avenue
New York 57, New York

Air Accessories, LTD.
100 East Lancester Street
P.O. Box 1326
Fort Worth 1, Texas

Aircraft Hardware Mfg. Co.
810-812 Edgewater Road
New York 59, New York
also 2344 East 38th Street
Los Angeles, California

Air-Parts, Inc.
723 Sonora Avenue
Glendale 1, California

Clary Multiplier Corp.
1524 90 North Main Street
Los Angeles 12, California

Collins Engineering Company
9050 Washington Blvd.
Culver City, California

Durham Aircraft Service, Inc.
Northern Blvd. at Prince Street
Flushing, New York
also Building No. 3
Douglas Plant
Municipal Airport
Tulsa, Oklahoma

General Aviation Equipment Co.
69 Public Square
Wilkes-Barre, Pennsylvania

Globe Aircraft Corp.
North Side Station
Fort Worth 6, Texas

The S. A. Long Company
232 N. Market Street
Wichita 1, Kansas

Parker Service Agency, Div.
The Parker Appliance Co.
17325 Euclid Avenue
Cleveland 12, Ohio
also 6506 Stanford Avenue
Los Angeles, California

Schuster Electric Co.
321 Sycamore Street
Cincinnati, Ohio

The Stanco Company
1914 Canton Street
Dallas 1, Texas

Snyder Aircraft Corp.
5036 W. 63rd Street
Chicago, Illinois

Supply Division, Inc.
Lambert Airport
Robertson, Missouri

Van Dusen Aircraft Supplies, Inc.
2004 Lyndale Ave., South
Minneapolis 5, Minnesota

The Weatherhead Company
300 East 131st Street
Cleveland 8, Ohio

ENGINE PARTS:

Aviation Activities, Inc.
612 Wholesale Merchants Bldg.
Dallas, Texas

Continental Motors Corp.
c/o Continental Aviation & Engine Corporation
76 North Getty Street
Muskegon, Michigan

General Wire & Electric Co.
Dodge Building
53 Park Place (Room 409)
New York 7, New York

Pacific Airmotive Corp.
1628 McGee Street
Kansas City 8, Missouri
also 6265 San Fernando Road
Glendale, California

Ranger Aircraft Engines
Division of Fairchild Engine & Airplane Corp.
Farmingdale, New York

Solar Aircraft Company
2200 Pacific Highway
San Diego 12, California

INSTRUMENTS:

Abrams Instrument Corp.
606 East Shiawassee Street
Lansing 3, Michigan

Eclipse—Pioneer Division
Bendix Aviation Corporation
Teterboro, New Jersey

Jack & Heintz, Inc.
Cleveland 1, Ohio

Kollsman Instrument
Division of Square D Company
80-08 45th Avenue
Elmhurst, New York

Link Aviation Devices, Inc.
Binghamton, New York

Sperry Gyroscope Company, Inc.
Great Neck, Long Island, New York

MISCELLANEOUS:

The G. W. Holmes Company
196-208 East Gay Street
Columbus 15, Ohio

Aero Corporation
Municipal Airport
Atlanta, Georgia

United Aero Service, Inc.
P.O. Box 1028
Delta Air Base
Charlotte, North Carolina

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WASHINGTON, D. C.

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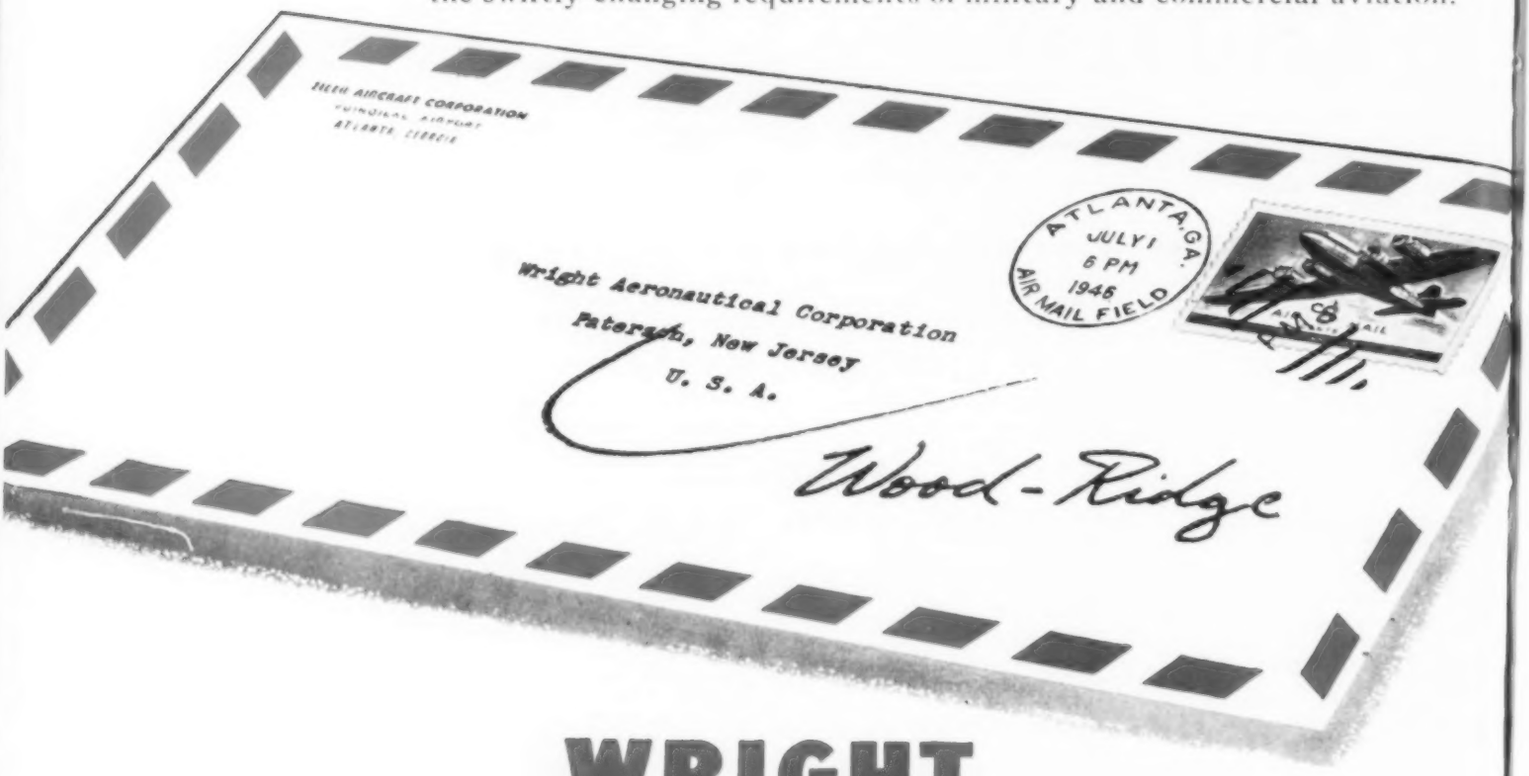


WRIGHT

AERONAUTICAL CORPORATION

WOOD-RIDGE N. J.

POWER FOR AIR PROGRESS

The A.M.D.S.

SURVEY OF AIRCRAFT OWNERS

Beginning an authoritative series revealing significant facts and figures from the most penetrating analysis ever made of the owner and his airplane.

WHO IS HE?

PART I—The Aircraft Owner

By E. H. PICKERING
Director, Air Market Data Service

THE identity, activities, opinions and plans of private aircraft owners need no longer be the subject of indefinite conjecture in the industry's lengthening study of its customers and their buying habits and desires. Voluminous statistics have now been gathered through the first in a series of extensive surveys conducted by Air Market Data Service, and cold facts concerning the owner are emerging to clarify many important points. Where other surveys have been either individual company studies of owners of their certain products or independent analyses of prospective airplane users and buyers, AMDS research is aimed at a broad and representative cross section of persons known to own and operate their private aircraft.

How Survey Was Conducted

Impartiality was the goal from conception to completion, for this was the first independent survey of a large, representative group of aircraft owners ever conducted. From the latest official Directory of U. S. Certificated Aircraft we obtained every other aircraft owner's name, state by state, eliminating the names of aircraft manufacturers and airlines. Scientific sampling of each state in proportion to its aircraft registration assured equitable distribution of owners throughout the 48 states. Such sampling also assured comprehensive selection of aircraft as to size, type, age, horsepower and price.

Questions were carefully considered to avoid bias or to influence answers, and the range covered was determined by a careful study in which Air Market Data Service considered suggestions from its subscribers, among whom are most of the aircraft industry's leading sales and merchandising authorities.

Questionnaires were sent to 10,000 owners of certificated aircraft in the United States, or approximately half of all aircraft owners. Two weeks were allotted for receipt of answers, and at the end of that period 1,152 of the owners had responded, representing an ownership of 1,973 airplanes (5.25 per cent of the nation's certificated aircraft). An interesting sidelight was that 97 of those responding had sold their aircraft during the preceding five months and were no longer owners, although they answered the questions on the basis of their recent ownership.

Operators Own Most Planes

Replies fell into two classifications —owners who earn their livelihood from the ownership, sale, service and use of airplanes, and owners whose aircraft usage is not related to aviation business. These classifications are known separately as "operator" owners and "private" owners.

Of those who replied, 264 were operators owning a total of 1,042 airplanes. The remaining 888 private owners represented a total ownership of 931 airplanes. This shows the nation's average ownership to be 3.98 airplanes per operator and 1.18 planes per private owner.

Whereas 87 per cent of the private owners possess one airplane each, 62 per cent of the operators own three or more aircraft each, 21 per cent own two and only 18 per cent own one.

The average operator has owned 12.67 airplanes in the past, while the average private owner has had 3.02. More present-day owners purchased their first airplane in 1944 than in any other year.

These figures, now revealed for the first time, assume great significance when applied to national ownership. The Civil Aeronautics Administration's latest complete figures of U. S. Civil aircraft registrations totalled 37,381 airplanes as of January 1, 1946. By Air Market Data Service calculation, 19,805 airplanes—more than half of all certificated craft as of January 1—were owned by 4,976 operators. The remaining 17,576 airplanes were owned by 14,895 private owners, who outnumbered the operators by three to one but possessed fewer airplanes.

(Continued on page 32)

Flying Culver's

Culver's contribution to private flying development offers new design plus aerodynamic pioneering with real surprises. Here's your check-out.

By JOE JAMES

"THERE'S the Model V!" Rolling into a tight turn 2,000 feet above the sprawling Culver aircraft factory at Wichita, Buddy Vehle pointed to bright splashes of color that dotted a broad concrete ramp.

Wheels touched and we rolled down the narrow factory test strip. Now the splashes of color materialized into some twenty or so trim little airplanes with wide tricycle gear, droop snoots and fuselages that humped at the cockpit, then tapered back to a high triangular tail. These were the Model V's.

"By" Woodbury — President T. Bowring Woodbury on Culver letterheads — strode out to meet us with a broad grin. "Glad to have you aboard," he beamed. "Meet Bill Taylor, our test pilot. You already know Jimmie Marshall, our Texas dealer, and his partner, Buddy Vehle."

How Simplifly Works

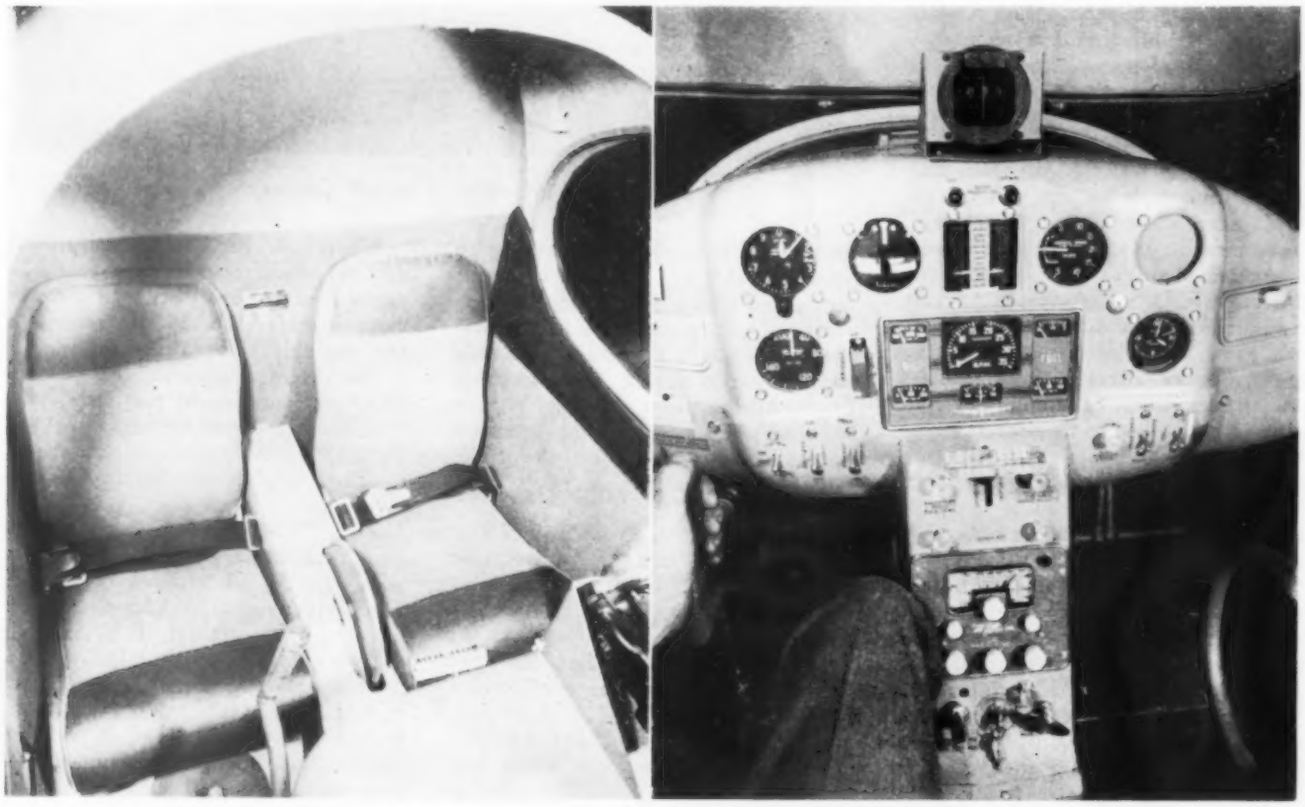
Out front, Bill Taylor was waiting beside the brown and yellow Culver.

Taylor knew my first question would be, "What is Simplifly?" and he set out to explain the operation of Al Mooney's unique system. Actually Simplifly has no resemblance to two-control, Taylor explained. It consists merely of an interconnection between flaps and horizontal stabilizer to give optimum trim at each flight attitude. "Let me show you how Simplifly operates before we take 'er up," he suggested.

Standing on the wing, he reached down between the seats and moved a large wheel about the size of the elevator trim on a twin-engine Beech. "Suppose you're taking off," Taylor continued. "Set the panel indicator on 'take-off' and, as you roll this control back, you lower seven degrees of flaps. At the same time, the horizontal stabilizer tilts just enough to properly trim the plane for best take-off attitude and first 200 feet of climb."

This was interesting. As Taylor moved the Simplifly control the entire horizontal stabilizer moved with the wing flaps. "Here's climb trim," Taylor went on, rolling the control forward until the indicator pointed to 'climb'. "Now you have zero flaps and the stabilizer is set to give a 76-mph. climb attitude. What Simplifly does is give you optimum trim for any attitude," Taylor added. "With Simplifly to guide him the novice can trim his airplane exactly as an experienced pilot would trim it."

The throttle is not connected with Simplifly and all flight controls operate exactly as in any conventional airplane, Taylor explained. Simplifly merely provides an accurate and quick trim for any attitude. "But hop in and fly it," he suggested. "You'll see what we mean."



Easily-entered and well-planned cockpit is pleasing Model V feature. Air foam rubber seats, left, designed by Wayne Ross Porter, are adjustable. Simplifly control wheel is visible between seats. Instrument panel, right, groups gauges in semi-circular arrangement with engine instruments in squared area at lower center. Simplifly indicator, centered just below compass, is set on "climb." Pedestal has transport-type throttle, push-pull prop and mixture controls. Radio panel is near pilot's knee and parking brake, ignition switch, and starter are just below.

Model 'V'

Flight picture emphasizes Model V's upturned wing tips, tapered tail, droop-snoot and canopy area. Upturned tips provide added stability while nose, which is cocked five degrees, improves already fine visibility. Culver carries 32 gallons of gasoline in Pliocene rubber tanks, located in wing's leading edge, has 800-mile maximum range at 60-hp. cruise.

New, Different Airplane

Even if the Model V didn't have Simplifly, the easily entered and smartly appointed cockpit would mark it as a truly new and different airplane. To enter the Culver, you simply step on the trailing edge of the wing, walk forward, swing the Lucite hatch up and forward, and step into the cockpit. With the hatch in place again, you feel like a goldfish in the front end of his bowl. Visibility, to put it mildly, is excellent. Seated on air foam cushions, you find your legs can reach from here to there comfortably and, if necessary, the seat may be moved backward or forward. But Culver hit the jackpot in the instrument panel and control pedestal.

The cockpit arrangement is just about the neatest thing we've seen. Instruments are effectively grouped on the raised center section while engine and prop controls—and a transport-type throttle control—are mounted on a pedestal not unlike one you'd expect to find in a diminutive twin-engine transport. Take a look at the picture on page 22 and notice the neat throttle arrangement, the push-pull prop and mixture controls (just like the light switch on your auto).

Rudders Steer Nose Wheel

"She's all yours," Taylor urged. "There's the wobble pump just below your seat and the primer is under the left panel. Give her a couple of shots, then pull the starter handle here on the pedestal."

Bending forward to move the wobble pump was all the exertion required. The Continental kicked over, we released the parking brake (also on the pedestal) and, with a touch of throttle, the Culver started rolling.

We taxied briskly across a foot-deep ditch, then up on the turf section of the Culver test strip. "Go ahead and open her up a bit," Taylor encouraged. The turf was rough but the V took it more smoothly than most automobiles. Steering is done by rudder, which controls the nose wheel. The V's ground-handling characteristics are excellent on straight-away taxiing and, because of the fine visibility, there is no need for S-turning. However, turning in a short area takes technique and you can't just sit down on one brake and pivot. To turn you use full rudder and then alternately press and release your brake inside the turn.

At the end of the runway, we toed the brakes, revved up the 85 hp. Continental to 2,000 rpm., and checked the mags. "Go ahead," Taylor nodded, "she's all yours."

Nose-High on Take-Off

Rolling the Simplifly control to "take-off" position I released the brakes and applied full throttle. As we gained momentum, some rudder pressure was needed to keep the V rolling straight ahead. "Help her off when the airspeed hits 50," Taylor suggested. "She'll seem to climb a little nose-high for that first 200 feet, but that's the best attitude."

Now we were doing forty and the nose wheel was off . . . fifty. I gave the stick a bit of back pressure. She came right off and I relaxed back pressure to see what Simplifly would do. The nose moved up—a bit higher than I am used to seeing—and I shoved it back down. Taylor laughed. "Let Simplifly do it," he chuckled. "It'll seem steep, but it's the best attitude." So I relaxed forward pressure and let Simplifly have it. The nose eased back up and stayed there.

"Now you're at 200 feet," Taylor suggested. "Set the control for climb and ease off power." With the indicator on "climb" the nose eased down a bit and the airspeed teetered between 70 and 80, then settled midway. "Seventy-six is the best climbing speed," Taylor nodded.

Negative Flap for Cruise

Leveling off at 2,000 feet with two-thirds throttle, I pulled the prop control to high pitch. The two-position Sensenich settled down to 2,450 rpm. and the airspeed eased up to slightly above 120 mph. Cruise attitude seems a bit nose-high, but this is due to the unusual fuselage design. Actually, in cruise setting, the Simplifly control gives a 4 to 6½ degree *negative* flap setting and puts the V on a "step." This cruise attitude, according to designer Al Mooney, reduces under-fuselage burble and *cuts drag 12 per cent.*

Stalling the Model V

Lest someone imagine Simplifly is akin to two-control, let it be remem-

(Continued on page 34)

"Cheerful Charlie," one of three Taylorcrafts owned by the University of Texas Co-Op Air Service, flies across the campus at Austin, Texas. Main building towers in the foreground while the state capitol is visible just below the plane's center section.

AN "Air Co-Op"—first of its kind in the nation—is providing low-cost private flying and instruction for 150 stock-owning student members at the University of Texas. In operation since March 11, when a fifty-year state charter was issued, the University of Texas Co-Op Air Service now owns three spanking-new Taylorcrafts, has leased hangar and office space, plans even further expansion in membership and activities next fall. At that time, the Co-Op directors hope to be ready for an extra plane for cross-country work and for a Link trainer.

Originally set up with 100 members—each investing $100—the unique co-operative organization has efficiently cut costs by careful planning and through utilization of the special skills of members. Law students drew up the charter, constitution and by-laws, and prepared stock certificates. Student-members specializing in particular fields serve as vice presidents in charge of education, publicity, engineering, public relations and statutes. The secretary is a business administration major, charter member and one of the four girls belonging to the Co-Op. Instructors, also members, are paid $2 an hour.

An Idea Is Born

It all started back in December when Travis Williamson, an Air Corps veteran, had an idea. Since a large number of university students were former military pilots and, in addition, plenty of students were interested in learning to fly at low cost, why not set up a co-operative organization, utilizing the varied skills of University students? Williamson took the scheme to Dr. John H. Frederick, professor of transportation and industry, an authority on commercial air transport problems, and a SOUTHERN FLIGHT contributing editor. Frederick thought the plan sounded good — sent him to Reed Granberry, vice president of the University and chairman of the Air Research Council. Granberry liked the idea but agreed more details were needed.

To get them, Williamson went to three men. Dr. C. C. Colvert, Association of Texas Junior Colleges president and director of the CPT program in 1938, contributed records of a flying school he had operated in Louisiana. Clint C. Small, former state senator and Austin lawyer, knew all about getting a Co-Op incorporated and gave friendly advice and assistance without charge. E. C. Rather, chairman of the University Co-Operative board of directors, supplied facts about the Rochdale Co-Operative plan on which the Co-Op Book Store, across from the campus, is founded.

Rochdale Plan

This first true consumer plan was set up in 1844 as the Rochdale Society of Equitable Pioneers. Today it is recognized internationally and its primary principles are (1) open membership, (2) democracy of control, (3) patronage dividends in proportion to purchases, and (4) limited interest on share capital.

As adapted to the Air Co-Op, provisions three and four work like this:

Organized to provide low cost instruction and private flying on a co-operative basis, the nation's first "Air Co-Op" is operating smoothly at the University of Texas.

'HIGHER EDUCATION'

Student 'Air Co-Op'

By KATHERINE ROGERS

Ownership of a $100 share entitles a member to cheaper flying—$6 an hour for solo and $8 for dual instruction instead of the commercial $8 and $10. In addition he gets semi-annual dividends of 3 per cent on his stock (which may be turned in at face value at any time) and rebates of $1 an hour or more (depending on income) for time in the air. Probation for those who do no flying within a month after joining will keep it from becoming just an investment, but there is no set requirement as to the amount of flying a member must do.

Democracy of control is insured through active member participation and through the election of officers and board members. Modifications of the broader Rochdale plan—such as limited instead of open membership — were necessary. Further information about the principles and methods of the Rochdale plan was obtained from a pamphlet, *Fundamentals of Consumer Co-operation*, by V. S. Alanne, published by the Co-Operative Publishing Association, Superior, Wis.

"It is not a club in which a member is always 'paying in'," Williamson stresses. "It is a sound business organization, a membership corporation in which the only payments are for actual flying time, and we hope to bring these charges down steadily."

A five-man board of directors was set up—with two student members and three faculty members. Williamson and R. L. Templeton, both students, were elected president and treasurer. The remaining three board members were selected from the University faculty. Two of these men, Dr. Frederick and Dr. M. J. Thompson, professor of aeronautical engineering, are non-participating members and own no stock. Their advice, influence and prestige have been of great value. The fifth member, Dr. Colvert, is a stockholder and a very active member of the board. All officers and board members serve without pay.

Choice of Plane

Of the sixty-nine shareholders canvassed at the first meeting in March, 50 per cent were either qualified instructors or in a position to become instructors. Two already had the necessary rating, twenty held commercial licenses, and thirteen had enough flying time to be granted commercial licenses. Of the remainder, twelve had private licenses and twenty-two were beginners.

Although there are now almost twice as many novices, these statistics made it apparent from the first that there would be almost as much demand for pleasure flying as for instruction. With this in mind, a meeting was held to determine the number and type of planes to be bought. After open discussion the members voted—by a large majority—to buy three new Taylorcrafts.

"Primary qualifications were low cost and economical operation, and on both counts we felt it was our best bet," President Williamson said. "Also T-crafts could be purchased quickly —the whole process from ordering to delivery took less than two weeks." Williamson and the other fliers felt that, for both flying-for-fun and instruction, the Taylorcraft's side-by-side seats and wheel control were advantages. The three craft are now being used for cross-country flights when slack schedules permit, but the Co-Op hopes soon to have a new plane solely for cross-country flying.

The Co-Op's three Taylorcrafts were purchased from the same local

The Co-Op's three Taylorcrafts are shown below on the line in front of Browning Aerial Service at Austin, Texas. University students keep down flying costs through co-operative efforts. Top, right, student pilot E. R. Hardwich polishes a stabilizer and, just below, Tom Hart, former B-29 pilot, points out aircraft features to coed Vera May Skains.

dealer who contracted with the Co-Op for field and hangar privileges. The three planes cost $7,574 of the group's original $10,000 capital.

Contracting for a Base

Flight base for the flying Co-Op is a small private field operated by the Browning Aerial Service and located just inside the city limits at Austin, Texas. The contract with the Browning service was made after careful consideration of several offers and provides for payment of $10 monthly for office space, $10 monthly per plane for storage, and $75 monthly for use of the field by the three planes now owned by the group, with reductions for additional planes which may be bought.

Office furniture cost $175 and consists of two desks—for the manager and secretary—a stenographer's chair, office chair, typewriter table, and a large table with six chairs to be used by members for log work and study.

By contract, the Browning service is to provide fuel and maintenance at standard rates and is to supply a manager for $200 a month. The Co-Op gets as much of this manager's time as is needed and the field is entitled to any time he has left over. The manager's chief duty is keeping a record of flights. He schedules every member who calls in for time and provides a Co-Op instructor. The Co-Op's instructors give flight checks to student fliers and the manager gives them to licensed pilots. The manager also determines whether a schedule is slack enough to permit a plane to leave on a cross-country for either a single afternoon or a week-end.

Drafting a Budget

The organization's budget makers figured an overhead of around $6,990 for the first year, allowing $1,560 for depreciation on furniture and planes (20 per cent); $1,380 for office space, hangar rent, and use of airport; $2,400 for manager's salary; and $1,500 (at $125 a month) for secretary's salary with insurance paid-up out of the original capital.

With each plane bringing in $6 an hour, discounting pay to instructors, they estimate that $4.12 can be cleared on each plane-hour—allowing a maximum of $1 for gas, 13 cents for oil, and 75 cents for maintenance. At this computation, fewer than 1,700 plane-hours per year, or thirty-seven per week, would be needed to break even.

On Sunday, March 31, the Air Co-Op began operation with an elaborate christening ceremony. Special busses carried students to the field where five sweetheart nominees of the University—dressed in cowboy regalia—officiated at the christening. Three of the beauties went up with the pilots who took "Doleful Dan," "Cheerful Charlie," and "Frustrated Frank" into the air for a crowd of spectators and newsmen.

Since that day, the Co-Op has been operating smoothly. Some changes, of course, had to be made. Insurance was transferred to monthly payments. Sale of ticket books at the University and at the field was substituted to simplify bookkeeping and eliminate the need for a secretary. Membership was also enlarged.

Co-Op membership was at first limited to one hundred, of whom more than 60 per cent were Air Corps veterans. But a month of operation revealed that the planes were not being kept busy. Students were not taking as many flying hours as they had estimated when first canvassed. Moreover, veteran fliers were not taking as much time in the air as beginners and student pilots working for licenses.

So, on April 23, fifty new shares of stock were put on sale with the aim of getting more flying members—especially beginners. A government surplus Link may be purchased for $350 or, if purchased through an educational institution such as the University, will cost only $210. The Co-Op has veteran Link trainer operators among its members but has no storage space available for a trainer at this time.

Income and expenses for the first month of operation stacked up like this:

INCOME

143 hr. at $6	$858.00

EXPENSES

Gas and oil	128.59
Depreciation	120.00
Insurance	130.00
Manager	200.00
Operational	115.00
Maintenance	1.62
Incidental expenses	54.01
Total expenses	$749.22

"Incidental expenses" included such items as telephone lines and installation, painting the office, spraying insignia on the planes, and services to the planes which do not come under the category of maintenance: installing tie-down rings, reinforcing floor boards, installing heel plates, etc.

These incidental expenses, which will not be repeated, brought the cost of flying per plane-hour to $5.56. Next month the Co-Op hopes to bring it down to $4, so that the amount members pay can be cut from $6 to $5.

$3 Flying is Goal

With 150 people flying only two hours each, the three planes would bring in $1,800 revenue on 300 hours flying time. The increase would double maintenance and fuel costs but the other expenses would remain static. By increasing flying and decreasing costs along this sliding scale, the group plans to bring members' payments down to $4 and even $3 an hour. It is also looking forward to an independent set-up as soon as it is well under way by which costs would be further cut.

"We are convinced that such co-op groups can revolutionize private flying," says Williamson. "The cost of owning a private plane is excessive because all the up-keep expenses are there—storage, depreciation, insurance, and maintenance. The single owner finds it hard to put in enough flying time to make worthwhile these up-keep costs of approximately $800 a year, plus the original cost of the plane. But non-profit groups such as ours, by operating at minimum costs and getting from 1,000 to 1,500 flying-hours per year out of each plane, can make private flying practicable."

The UT fliers hope to have a hand in establishing the roots of a development that will mushroom all over the country to give wings to those who want them. ★ ★ ★

Store Co-op Wings for Clerks

Goldwaters of Phoenix, Ariz., is the first store in the Southwest—and probably in the nation—to make a lightplane available for employes. Barry Goldwater, president, has purchased an Aeronca Champion for his employes and helped them organize the "Flying G Club". Membership in the Club is limited to 18 employes and 14 are now awaiting admission. Members' ages run from 19 to 38.

The store also uses a private plane for closer contact with its Frescott, Ariz., shop and to give buyers better access to market centers.

Barry Goldwater, right, president of Goldwaters' store in Phoenix, Ariz., discusses an air map with a group of employe members of the store's flying club.

PUSH-BUTTON POWER

Rocket motors, after a vital wartime role, promise a standby source of power for commercial craft.

Jet-assisted Ercoupe started take-off roll same time as unassisted Porterfield (lower right). In first tests of jet-assisted aircraft, Ercoupe cut normal take-off distance from 580 to 300 feet, a saving of 48.3 per cent. With an overload of 285 pounds, take-off roll was shortened from 905 to 438 feet.
—(California Institute of Technology Photo.)

IN August, 1941, while Europe groveled under Hitler's heavy heel, a tiny cluster of scientists and military men watched an Ercoupe speed down the runway at March Field, California. As the lightplane gained speed, the pilot flipped a switch. Powerful jets shot from under each wing and the Ercoupe was instantly pushed steeply into the air. Once clear of the ground, it kept flying. The first jet-assisted take-off in the United States was a success.

Much has happened since that first rocket motor take-off in 1941. Throughout the war, jet assistance—or Jato, as it came to be called—did a bang-up job for the Navy in getting overloaded planes off crowded carrier decks and short air strips. Now Jato has turned to peace-time uses. The Aerojet Engineering Corporation, which manufactured war rocket motors after a group of California Institute of Technology scientists had perfected the engines, has carefully analyzed potential uses for jet-assist units in lightplanes, gliders and commercial aircraft.

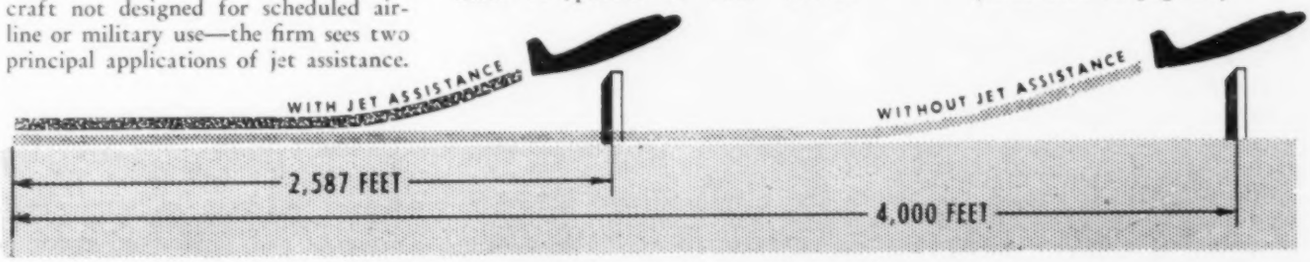
In the lightplane field—and by "lightplane" Aerojet means any aircraft not designed for scheduled airline or military use—the firm sees two principal applications of jet assistance. With a rocket motor assisting, private fliers will be able to take a lightplane out of any field or body of water in which it is possible to land safely. This means many small lakes or high altitude landing areas will be made available. Secondly, a rocket motor would be a constant standby source of power in the event of engine failure. Should a pilot see he had miscalculated a dead-stick approach, a mere push of a button would unleash an ample burst of power to compensate for errors in judgment, speed or distance.

A glider with a jet-assist unit installed can be whisked to soaring altitude at the rate of 3,000 feet a minute. To reach a thousand feet—an altitude where the glider pilot can best take advantage of thermals—a rocket motor needs 77 pounds of fuel. Rocket launching would eliminate towing and much equipment now necessary.

Jato units are also expected to greatly increase payloads for twin-engine aircraft. Length of runway has always been a governing factor in amount of payload an aircraft can carry. For example, the CAA has authorized the operation of the DC-3 at a gross weight of 25,200 lbs. from runways a minimum of 4,000 feet long at sea level. As altitude increases, the amount of runway required becomes greater. The distance required to make a single engine take-off is in most instances the critical factor in limiting an aircraft's payload.

Just how a DC-3 would operate at sea level with jet-assist is explained in the following analysis:

(Continued on page 38)



Effect of jet assistance on distance for a DC-3 to take off and clear a 50-foot obstacle. Plane at left used jet assistance as soon as enough speed was developed to control yaw, then pilot feathered one engine. Ground run was continued on one engine assisted by jet motor until take-off speed was reached. After using 1660 ft. of runway, aircraft becomes airborne at speed of 98 mph. Jet engine assistance is required for 12 seconds.
—(Aerojet Engineering Corp. Drawing.)

New Horizons For Taylorcraft

BC-12D Taylorcrafts on this assembly line are moving tail first towards wing and powerplant installation for completion.

By TOM ASHLEY

THERE are hurdles yet to come but the lightplane industry's production record since war's end stands as a brilliant reconversion accomplishment amid a confused scene in which labor and material shortages, complicated by government price and production controls, have threatened disaster at almost every turn. Whereas only about 600 new lightplanes were delivered between V-J Day and January, the "little industry" was rolling along at a thousand-planes-per-month clip at the end of February and turned out over 3,000 aircraft in June, breaking all peacetime records. By September a rate of 60,000 planes per year is expected to be attained.

The industry is going through so many changes in its rapid expansion it becomes difficult to define a pattern as to the outcome. But reconversion should be completed during the next six to ten months and next spring should bring the payoff in determining many points about lightplane manufacturing and marketing.

Fifteen-Fold Expansion

Taylorcraft Aviation Corporation at Alliance, Ohio, is unique in the industry's transition in that it represents drastic overhaul and greatly-expanded production of an old-line, widely-accepted two-place airplane constructed of steel tubing and fabric. Taylorcraft manufactured 3,074 of them during the six years between 1936 and 1941, and produced 2,080 Army versions of the same plane during 1941-43. In August, 1945, the company delivered its first personal airplane in almost four years, and within ten months it had manufactured 2,003 airplanes — 391 more T-Crafts than the combined production of 1936, 1937, 1938 and 1939. Production reports to stockholders which are considered accurate show that Taylorcraft produced two airplanes last August, 22 in September, 60 in October, 87 in November, 81 in December, 152 in January, 234 in February, 353 in March, 464 in April and 548 in May. The factory was going full-tilt in June in an all-out effort to reach a 30-per-day production.

The Taylorcraft factory at Alliance has been expanded to fifteen times its 1940 size of 18,000 square feet and 400 employes. By the end of 1943 it had 48,000 sq. ft. and 760 workers, and this was bulged to 118,000 sq. ft. and 1,800 employes by the end of 1945. Current construction, scheduled for completion during July, will bring the plant's floor space to 302,000 sq. ft. and its payrolls, now carrying 2,300 persons, will be swelled to 3,100 workers by the end of the year.

Still more expansion was announced only last month, when the company revealed it was negotiating for final assembly plants of 100,000 sq. ft. each at Tulsa, Oklahoma, and Fresno, California.

Confident of private flying's immediate growth, Taylorcraft Aviation Corporation is rapidly expanding its facilities and production.

In addition, Taylorcraft utilizes the production facilities of three plants in Cleveland which manufacture all Taylorcraft landing gear, front and rear lift struts, ailerons and numerous smaller items.

Newcomer Overhauls Production

Behind it all is the unbounded enthusiasm of a man new to the Taylorcraft family, whose generous statements and conversations have started many a rumor ranging from forecasts that the auto industry was taking over to tales of impending mergers with other aircraft manufacturers. He is Nash Russ, capitalist and investor who stepped into the presidency last Fall and reorganized it as a division of Detroit Air-Craft Products, Inc. The stage was being set for all-out production of private planes, and Taylorcraft's stage was one of the country's busiest. They took a picture showing Russ rolling the first postwar BC-12D from the factory, completed only four days after Japan's surrender and acclaimed as the first lightplane to be delivered from a moving assembly line following the war's end.

But complications in management, materials and production began to block the Russ optimism, and it wasn't long before he instituted a house-cleaning. Russ moved from the front office out into the shops to don work clothes and learn just what the business of

manufacturing lightplanes consisted of. Looking back, he says he learned plenty in a short time — there were "factions" among the workers and supervisory personnel, who took sides in the matter of doing things differently and more efficiently; each airplane was a project within itself, and each airplane required a different amount of labor, materials, time and costs. If output became snarled along the line, it took days to determine the trouble, more days to correct it. There were too many snarls and not enough time to cure them if volume production was to be achieved.

Instant and far-reaching changes were ordered, and production began to roll. Drastic overhaul included mistakes in spots, and Russ's associates acknowledged them. One of these occurred when Russ imported a small group of automobile production "experts." They didn't pan out, he explained, but veteran aircraftsmen who joined Taylorcraft from old-line manufacturers for whom Taylorcrafts had produced components during the war did succeed.

With newly acquired finances, Taylorcraft applied wartime practices to its postwar expansion. Russ dispatched expediters throughout the country to find and buy materials, supplies and accessories months ahead and apply local pressure and insistence until deliveries came through. Construction of factory additions was mapped and expediters bird-dogged structural steel, building materials and tools for delivery months later.

Foreign Factory Planned

Russ has come up with something new for his sales organization, explained by him as follows: "We are establishing a school to train mechanics and instructors to supply our distributors and dealers with factory-trained personnel. We expect to have an enrollment of 200 to start with. Under the GI Bill of Rights the government gives each veteran $500 for each year spent in the armed forces, plus living expenses which are adjusted according to dependents. Our school will give first preference to GI's employed by Taylorcraft. Second choice will go to GI's within a 100-mile radius of the plant, and third will go to all other people employed by Taylorcraft. In order to help our dealers and distributors to qualify under the GI Bill of Rights as recognized schools, we have plans for them to build hangars and we will sell them a complete package of plans and parts to make them. These hangars will meet all requirements of the state to obtain a license for a school. The factory is also planning to develop T hangars for its dealers in due time, when materials will permit."

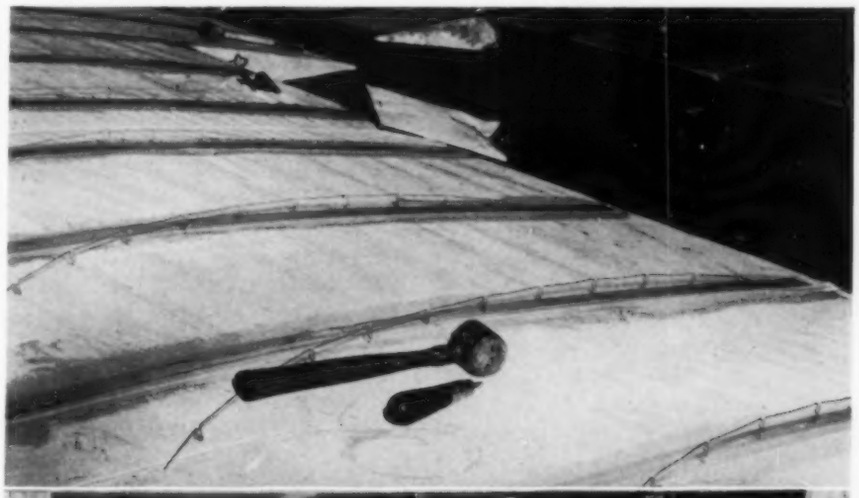
The changing picture of Taylorcraft has continued in other significant directions. One of these involves the foreign market. For years Auster Aircraft, Ltd., of Leicester, England, has been licensed by Taylorcraft to manufacture the Taylorcraft "Auster." Now this arrangement is being terminated and Taylorcraft will forego royalties from Auster to erect a factory of its own in Canada or the British Isles. The T-Craft is a favorite lightplane in foreign areas having high altitudes because of its exceptional performance.

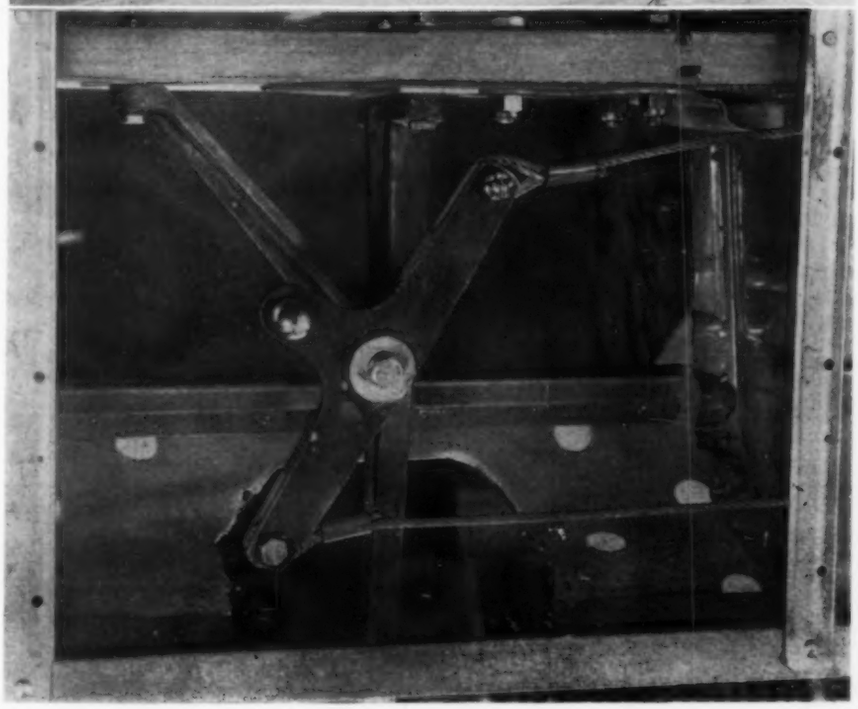
The company expects soon to have an NC on its four-place model, which has been flying for many months now and for which production is already under way.

In connection with plans for future production, Russ pointed out that Taylorcraft was fortunate in completing its L-2 contract in March, 1944, and went immediately into production for Douglas Aircraft Company on A-26 metal parts. "Thus we acquired machinery during war for postwar production," he said. New construction methods will be employed to bring about lower costs.

Meanwhile, the factory at Alliance has reached an unprecedented rate of production of its two-place model of fabric-covered welded steel tubing. The current goal is 30 airplanes per

Two of many improvements in manufacturing Taylorcrafts are illustrated below. Top photo shows a wing panel on which pre-doped fabric is being stitched with aluminum wire having springy crimps. These are easily forced into rib holes by tapping with the mallet. Lower photo shows Taylorcraft's new cast magnesium aileron bell crank assembly, which replaced an assembly of welded steel tubing having seven different pieces. Cables have soft copper sleeves.
—(Taylorcraft Aviation Corp. Photos.)





day, or a new plane about every thirty minutes. Each airplane requires about 52 hours in the factory. A fuselage that is started in the welding department early Monday morning is flight-tested the following Friday—it is in welding 16 hours, cover and primary 10 hours or less, dope shop 24 hours and final assembly 2 hours. The factory works two 8-hour shifts daily on a 6-day week basis.

Many Production Improvements

The two-place T-Craft is broken down into forty components, in which there are some 3,000 parts, for manufacturing, but major units are fuselage, wing, tail group, motor group, landing gear and cabin. Elaborately detailed production schedules, including a time study which charts each man-hour to develop its most productive utilization of materials and parts flowing into the completed airplane, are accommodated by innovations in jigs, tooling, conveyor lines and production methods. Approximately half of the main assembly area is devoted to welding. Into the other half are packed covering, doping and final assembly. It is one of the most conveyorized plants in the industry. Each airplane passes through ten inspection stations inside the factory before completion.

Taylorcraft's production has been accelerated tremendously by new construction developments. Many hours per airplane were eliminated through installation of new wing tooling costing $250,000 and replacing old tooling which was limited to the production of only seven wings daily. Whereas the old wing was tediously assembled of riveted ribs, the new wing has one-piece ribs of stamped metal. An innovation in rib stitching, used by Grumman before the war and adapted by Taylorcraft from its production of Curtiss C-46 ailerons during the war, substitutes crimped aluminum wire for the waxed linen cord formerly used in tacking the fabric to the ribs. This saved three and one-half hours per wing panel. Another innovation is a new metal door, constructed of two spot-welded stampings. It replaced a door constructed of welded steel tubing covered by fabric, and added only three pounds of weight. Metal stringers have replaced wooden stringers in the fuselage.

200 Planes Daily by Spring?

Nash Russ believes he has licked the toughest problems. Although his immediate goal of 30 planes daily may not have been reached on a day-in-day-out basis, he has produced 20 a day with regularity and probably has reached 30 a day on special occasions. That adds up to a lot of Taylorcrafts. We asked him to look into the immediate future, and his forecast follows:

"By September, 1946, we expect to be producing up to 100 ships per day," Russ replied without batting an eye. "By mid-July our new building should be completed, and by the spring of 1947 we should be making 200 airplanes per day."

That, by any standard, is one whale of a lot of T-Crafts. Was Mr. Russ quite sure he wanted to make such a commitment?

"Well," he replied with a smile, "you specified the immediate future and I gave it to you. You won't have long to wait for verification."

People who have never met Nash Russ know him for his optimism and have heard of his self-confidence. He summed it up in our interview like this: "I believe private flying will develop one of the nation's largest industries," he said. "Aviation has long needed the courage and capital to bring the costs of flying down in order that many thousands might fly. We of Taylorcraft are determined to go as far as courage and capital will allow, and we believe there is a great future ahead for industrialists who develop aviation on the scale it demands." ★★★

11,000 New Lightplanes Since January 1

APPROXIMATELY 11,000 lightplanes were manufactured in the United States during the first six months of 1946, an unprecedented record, and approximately 20,000 more will probably be manufactured during the next six months to bring the 1947 total to 31,000 planes, reports from leading manufacturers to SOUTHERN FLIGHT indicated on July 1. There were approximately 55,000 civil aircraft registrations as of July 1, as compared with 37,381 planes registered on January 1.

Piper Aircraft Corp., was the nation's largest producer during the first six months, reporting it had manufactured 3,131 planes. Aeronca Aircraft Corporation did not report, but probably was second. It was building them at a rate of 43 daily at the end of June. Taylorcraft was third with 2,205 planes built since January 1; Engineering & Research Corp. was fourth with 2,129 Ercoupes, and Luscombe built 1,004.

June lightplane production passed the 3,000 mark and schedules call for over 4,000 personal planes to be produced in July. Factory production reports for the month ended June 25 follow, with July schedules in parenthesis: Piper 650 (905), Taylorcraft 454 (800), Ercoupe 427 (550), Luscombe 276 (300), Globe 114 (258), totals 1,921 (2,813). Estimated June production figures, which should be added to the preceding totals, are 850 for Aeronca and 440 for Cessna, which was building 22 airplanes daily in mid June.

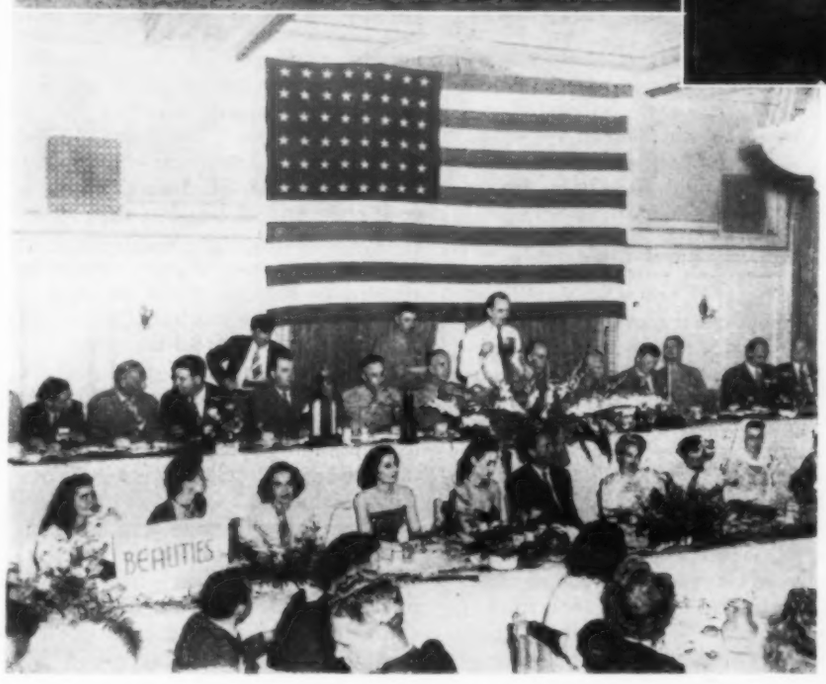
Three major companies will begin quantity production in July. They are Republic, which received an NC on its Seabee on July 1, North American Aviation (Navion) and Culver, which got its Model V NC in June. ★★★

AUTHORIZED TAYLORCRAFT DEALERS

NORTH CAROLINA
Fogleman-Hughes Flight Service
Gibsonville
P. O. Box 1331, Burlington
Dover Fogleman
Leroy Hughes **Dealer**

CALIFORNIA
Bassett & Co. Flying Service
Santa Paula Airport
P. O. Box 989
Wallace D. Bassett **Dealer**

CALIFORNIA
Golden West Aviation Sales & Service Co.
Kern County Airport,
Rt. 1 Box 304, Bakersfield
Bill Heyne, Mgr.
Jack Ferdinand, Chief Pilot **Dealer**



JET P-80's (left center in accompanying layout), Fireballs, Tigercats, Corsairs and other military planes dominated last month's Twelfth Annual National Air Carnival at Birmingham. But record crowds, including 350,000 on the big day, acclaimed civilian performances by Bevo Howard, Jess Bristow, Clem Honkamp and Mack McManus (upper left shows Bristow's "Flying Knife" act with an old Boeing fighter). Carnival Director Steadham Acker (center, pointing for Raymond C. and Roger S. Firestone) ran off events with stop-watch precision. Aeronca's two-control Chum (top right) was among new planes previewed and the annual banquet (lower left), complete with beauties who have helped make the carnival an institution of the South, was attended by top leaders of industry, government and military.—EDITH WIDEMAN.

A. M. D. S. SURVEY

(Continued from page 21)

Voluminous data from the AMDS survey are being processed by Air Market Data Service for the industry—so much, in fact, that at least forty-two printed pages will be required to record it. This article will observe the more significant highlights concerning the airplane owner, so that his present airplane and its usage and his plans for buying his next aircraft will receive ample discussion in the next issue of SOUTHERN FLIGHT.

Intimate Facts About Owners

There are more private owners of age 40, but their average age is 38, as compared with the operator's average age of 35. Male owners outnumber the ladies 53 to 1. Of all owners, 86 per cent are married and 69 per cent have children—29 per cent of the latter have two children, 22 per cent one child and 14 per cent three offspring.

Among the operators, 73 per cent have commercial pilot ratings, 22 per cent hold private tickets, 3 per cent student permits and 1 per cent have no pilot rating. Sixty-nine per cent of the private owners are licensed as private pilots, 18 per cent are holders of commercial ratings, 11 per cent are students and 1 per cent are without licenses. The average operator has logged 2,532 hours of flying and 50 per cent of all operators have more than 2,000 hours. The average private owner has logged 728 hours of flying but 50 per cent of the private owners have less than 300 hours.

Replies from operators showed they have an average income of $5,377. Apply this average to all operators and their total earnings amount to $26,500,000 annually. The average private owner falls in the $3,500-$5,000 annual income bracket, but the total earnings of all private owners amount to $212,113,389. Eighty-eight per cent of the operators own their businesses. Of the private owners, 59 per cent own their business; 35 per cent are "small-business" proprietors, 13 per cent are farmers and ranchers, 6 per cent are executives, 5 per cent are engineers, 5 per cent are doctors and dentists, 4 per cent are mechanics and the remainder are salesmen, sales managers, clerical workers, lawyers, teachers, etc., in that order. Incidentally, 5 per cent of the owners said they did not own an automobile.

Many points revolving about the aircraft owner's income and expenses can be discussed. A private owner in the $3,500-$5,000 bracket, for example, may not be able to afford more than a small amount of flying. But other factors enter into the matter. There is the point which cannot be ignored, that the average private owner is 38 years old—usually he has acquired more necessities, such as a home, furniture, life insurance, etc., than younger owners and has either paid for these or has substantially reduced his obligations. However, his earnings are not sufficient for high-priced airplanes or high operational and repair costs.

Ninety-two per cent of present-day aircraft owners paid cash for their airplanes, of which most were used aircraft at the time of purchase. But with new airplanes now reaching the market more will use time payment although 83 per cent said they intend to pay cash for the next ship they buy.

Airplane Utilization and Expenses

The average private owner uses his airplane 183 hours annually, but the operator's plane is flown an average of 482 hours per year. Figures supplied by private owners show they spend an average of $751 each per year on operational and maintenance costs, which amounts to $4.10 hourly. Because he logs so much more time, the operator spends an average of $1,325 annually per airplane, but only $2.75 hourly. These averages supply what is considered an accurate appraisal of operational and maintenance expenditures on a national scale—$39,442,682 if the CAA's January 1, 1946, aircraft registration total of 37,381 airplanes is used. As indicated by the AMDS survey, this can be broken down as follows:

	Private Owners	Operators
Storage	$ 3,269,136	$ 3,604,510
Insurance	1,823,346	5,323,584
Maintenance	3,357,016	6,377,210
Fuel	4,755,520	10,932,360
Totals	$13,205,018	$26,237,664

However, new aircraft plus surplus sales are expected to boost the January 1, 1947, census of certificated aircraft to or beyond the 85,000-plane mark, and with higher prices the above expenditures would then total about $100,000,000.

Urban vs. Rural Ownership

Here is one of the most significant revelations of the authoritative Air Market Data Service survey: Approximately three-fourths of the nation's private airplane owners reside in cities and towns of 100,000 or less population. The largest group—58 per cent—live in towns of 25,000 or less; 21 per cent reside in towns of 2,500 or less; 15 per cent are in communities of 25,000 to 100,000 population, and only 8 per cent live in cities of 1,000,000 or more. The rural distribution of operators is even more impressive, as we found that 70 per cent of them are located in communities of 25,000 population and less, while only 3 per cent are in cities of one million or more.

The private airplane's greatest improvement, as is well known, will be its increased utility. It must and will become more practical to more people before it becomes a vehicle for the masses. The following question was put to aircraft owners in our survey: "What do you believe would contribute most to your greater utilization of flying?" Replies showed that owners consider the lack of adequate airports and airport facilities, service and accessibility as being the major deterrent. Many owners wrote in pertinent comment, and a few samples, selected at random, will provide ample evidence of the attitude taken by a large number of airplane owners.

The Owner Speaks

An owner in Philadelphia commented: "I have had several airplanes, from two to five-passenger jobs. I think the service offered to plane owners is lousy; service people act as though they are doing you a favor to take your money. I have never complained about any bill as long as I got service. Flying was a hobby of mine and I spent three to five thousand a year for maintenance, storage, etc. I really cannot write all my complaints as they are too numerous. I have some friends who feel the same way, and they can well afford whatever expense necessary."

From Twin Falls, Idaho: "Let's have more airports, cheaper maintenance and mechanics who are not robbers."

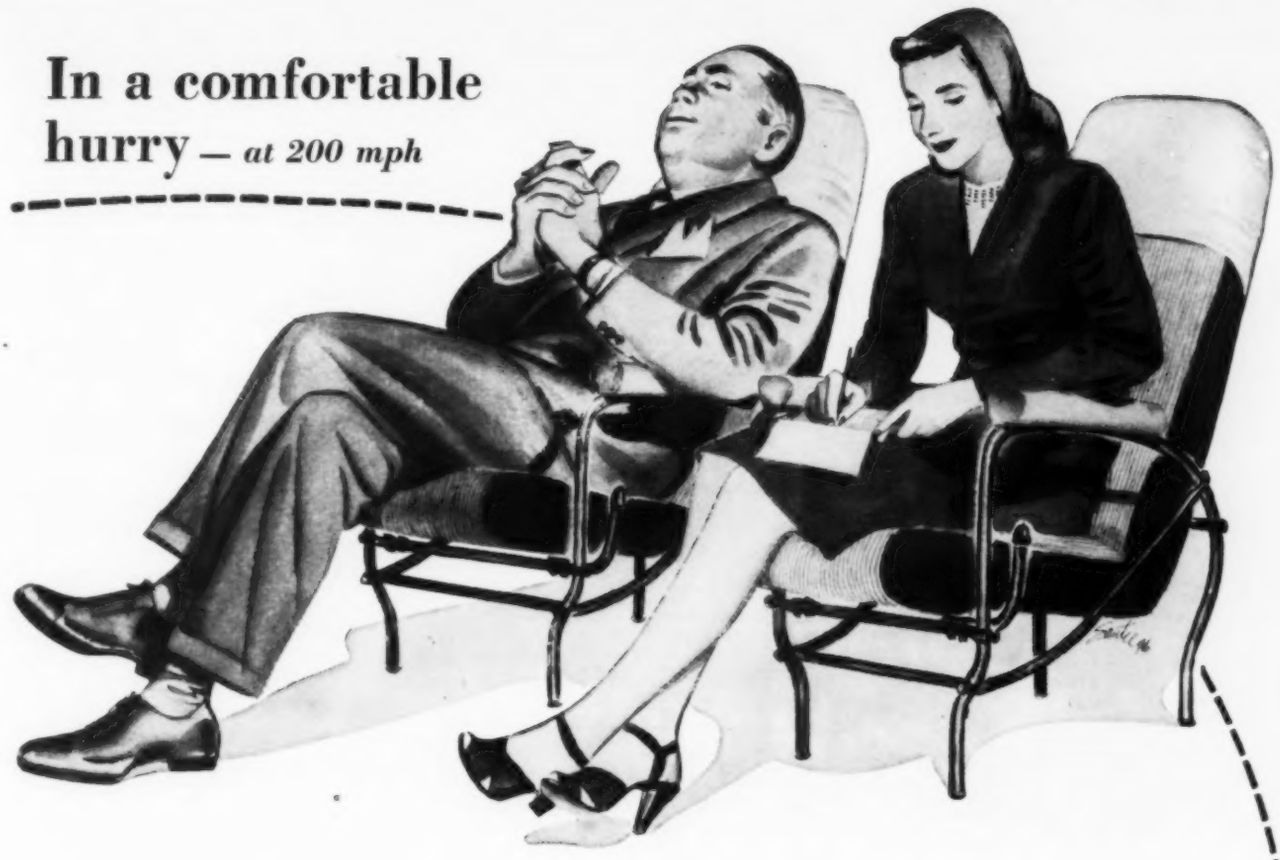
A man in Michigan, whose Piper Cub is operated about 400 hours yearly, explained that nine members of his family fly it. Among them are seven students yet to be licensed, a private ticket holder and one with a commercial rating. The owner said: "We need small-plane landing strips at or near all trunk-line intersections."

From Arkansas City, Kansas, came the following comment: "Keep the government out of flying. Build a good plane at about half of the present price. Let a man repair it himself if he can and cares to. A man should be allowed to keep his plane at home if he wants to. Too much regulation will hold aviation back from the masses."

Greater utilization of airplanes will come from "less mud, more airports more conveniently located, better service and improvement of airport personnel attitude," wrote an owner in Brunswick, Maine.

All owners who were sent questionnaires were asked to specify improvements they desired in airplanes and aircraft accessories. This will be covered, along with many other important points, in next month's article. ★ ★ ★

In a comfortable hurry — *at 200 mph*

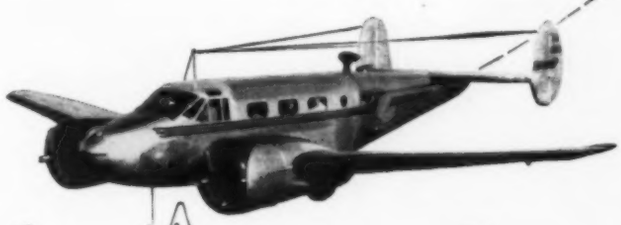


Travel time can be productive time for the executive who owns or flies in a Beechcraft Model 18. Your unfinished problems need not be left behind in the office; they can be considered calmly while your Beechcraft smoothly carries you at 200 miles an hour toward your next engagement.

Miles become measured in minutes rather than hours. An 800 mile trip as part of a normal day is practical, not unthinkable, and you find it possible to make more "on the spot" decisions. Your travel is correlated with your work, rather than dependent on the rigid schedules of other transportation methods.

At the end of a busy day in which your Beechcraft complements your other modern business equipment, you are still relaxed, and ready to join your friends for an evening of entertainment.

Write today—Facts, figures, and demonstrations are available without obligation.



Beech Aircraft

THE WORLD IS SMALL WHEN YOU FLY A BEECHCRAFT

CORPORATION
WICHITA, KANSAS, U. S. A.

bered that rudder is used in turns and also for torque correction in climbs. Also, there is no rudder or aileron trim tab. This means you have to hold a touch of right rudder in climbs. Stabilizer trim takes care of torque nicely at cruising speeds.

As for no-flap and partial flap power-on stalls—there ain't no such animal. You simply pull the nose a good hefty distance above the horizon and the Culver flies along like a stubborn mule with the airspeed hovering around fifty. I did this several times and watched the altimeter. I doubt if we lost fifty feet. Chop the power and you get much the same procedure, except this time the Culver mushes and loses altitude in a wing-level nose-high position. The same applies for attempted stalls with power-off and gear and flaps down. Just the same old settling with the airspeed still around fifty and plenty of aileron control.

The Culver will stall, however, as Taylor showed me. With full flaps down and power on, you can pull the nose some forty degrees above the horizon and she'll unload and drop off toward the right wing. But as the stall approaches, the V practically gets down on its knees and begs you to relax back pressure.

Approach at 80, Land 50-60

Landing the V is as simple as Simplifly can make it, but you still need pilot technique when you flare out above the runway. My first approach was too close and my cockpit procedure was ragged. Taylor agreed to shoot an approach and run through the cockpit procedure. Headed down-wind at a thousand feet, he flipped down the gear switch. "Drop the wheels at any speed," he said. "Won't hurt 'em." Then he eased back power and moved the Simplifly control to "approach." With the airspeed on 80, Taylor hugged the field on his base leg.

"You seem plenty high," I suggested.

Taylor nodded, then chopped full power. Pushing the prop control to the low-pitch position, he began rolling the Simplifly control smoothly toward "landing." The nose dropped and the airspeed stuck around 80. There was little tendency for the nose to rise. While I wouldn't say the Culver would maintain 80 hands-off, it certainly makes the job easier. Taylor broke his descent at about 10 feet, flared out a foot or so above the concrete, and let the Culver settle to the runway. It stayed there. Although with this procedure the Culver touches at a good clip—between 50 and 60 mph.—it loses forward roll in a remarkably short distance.

Model V Performance Data

THE following performance figures were taken from the factory's gross weight performance data. Cruising speeds listed are true air speeds (calibrated readings corrected for altitude and temperature):

Pressure Alt.	RPM	Speed MPH.	Fuel GPH.	Range (Miles)
70 hp. cruise (maximum)				
4,000	2525	132.5	6.3	676
2,000	2475	129	6.3	658
65 hp. cruise (75 per cent power)				
6,200	2500	130	5.5	754
4,000	2450	126	5.5	731
2,000	2400	123	5.5	713
Sea Level	2,350	121	5.5	702

Maximum cruising range possible with 60 hp. settings is 800 miles at 8,400 ft. with a 5 gph. fuel consumption. At this setting true air speed is 125. Maximum sea level cruising range is 736 mi., speed 115, 5 gph.

Rate of climb at sea level, with climb setting at 75 mph., is 660 fpm. Service ceiling 13,100; absolute 15,500.

Cross-Country Pilot's Plane

The experienced pilot who flies the Culver for the first time may find the Simplifly control annoying because he has never used such a "gadget" before. "That's the way it affected me," Jimmie Marshall, a Culver veteran, explained. "But after a few hours, I wouldn't be without it." Bill Taylor said about the same thing, and he has flown the V for some 250 or more hours. Using the system takes conscious effort but, once you get accustomed to it, operating Simplifly should become much like moving a conventional trim tab—with more helpful results.

Simplifly may seem to mark the Model V as a novice's airplane, but it is odds-on a tailor-made cross-country airplane. The roomy and well planned cockpit, 90-decibel cabin noise level, comfortable seats, Simplifly trim, and cruising range all whisper "cross-country." The Ex-Cell-O fuel injection system does away with carburetor heat worries and the pull-out-mixture control on the pedestal gives you proper lean above 6,000 feet.

The narrow margin between the V's 1,040 empty weight and 1,600 gross weight limits baggage capacity to seventy pounds. Present baggage facilities are 10 pounds behind the seats and 60 pounds in back of the instrument panel. As an interesting sidelight, the factory is paying employes $10 a pound for every weight saving suggestion not detracting from structural strength.

All in all, the Model V represents a pleasant and refreshing departure from stale designs. Striving to produce a really different personal plane that meets private flying requirements, Al Mooney and Culver have put in plenty of work since Mooney first pencil-sketched the future "V" in 1943. Culver was making target planes then—and the private job had to be nursed along in spare time. Now, four years later, that pencil sketch is rolling off the production line wearing an "NC" and first models are just reaching the sales territories.

Which may well account for the grin that won't come off By Woodbury's face. ★ ★ ★

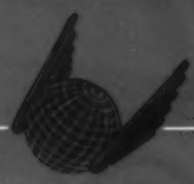
Cross-Country by Model V

FIRST dealer to take delivery on the new Culver was E. G. (Slim) Kidwell, owner-manager of Central Airport at Los Angeles, Calif. On the flight from Wichita to Los Angeles, Kidwell took the Model V over the El Moro and Flagstaff area, then purposely detoured south to check engine cooling over the Salton Sea area, lowest point in the United States. Reaching the West Coast, Kidwell wrote SOUTHERN FLIGHT:

Efficient nose cowling and fuel injection system are keys to Model V's uniform engine cooling.

"Cooling at every altitude and under every climb condition is excellent. At no time did it go over 190 degrees F.—even at the floor of the Salton Sea where the outside temperatures were better than 120. One landing was made on a soft sand field at an elevation of 5,175 ft. with only a 3,000 ft. runway. The ship took off easily with full gas load and some 85 pounds of baggage. At this particular field, it was mid-morning with dead-calm air. At one landing point surface winds were 35 mph., variable with strong gusts. Yet the airplane behaved remarkably well, both just before landing and while on the ground.

"The cruising range exceeds the average pilot's physical range. I was able to cruise it non-stop from Amarillo to Kingman, Ariz., at 9,000 ft. using the new altitude mixture control."



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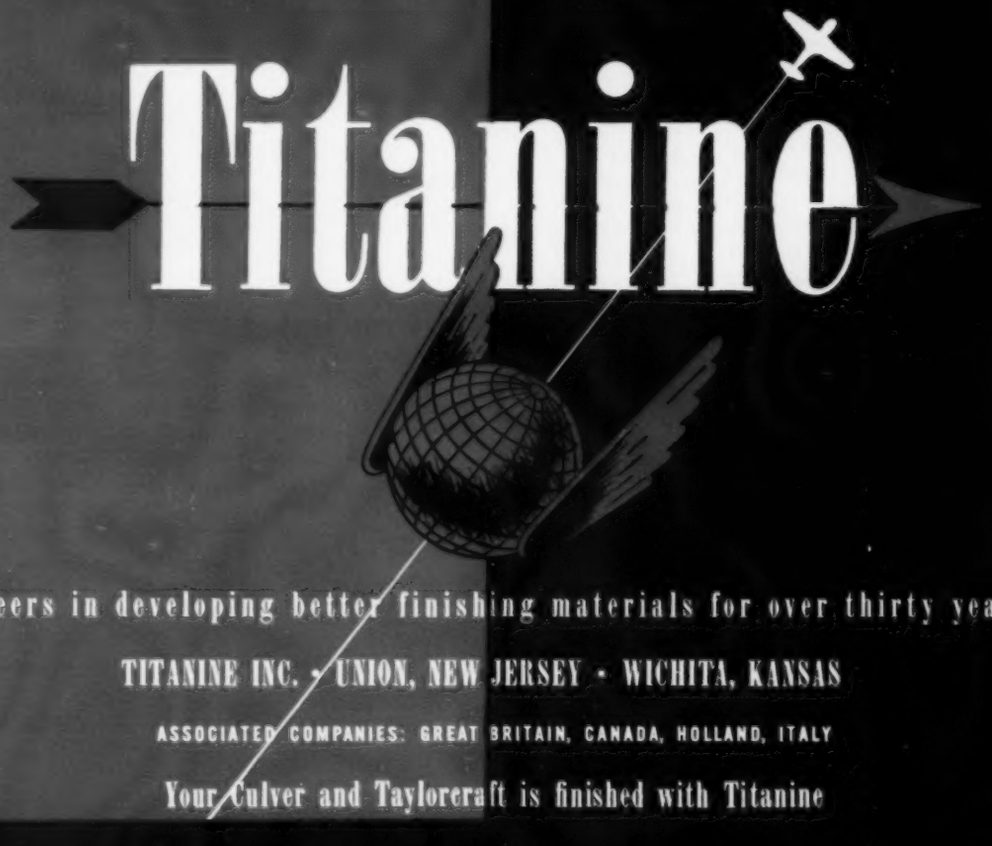

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THE OPERATOR'S FORUM

this month's topic

Do air shows help or injure aviation?

DEWEY MAUK

NORTHERN OKLAHOMA FLYING SERVICE, BLACKWELL, OKLA.

MY contention is that as much or more real aviation good has come from the passenger-carrying type of air show as from any other source. I think youngsters should be encouraged and helped, rather than censured, if they are doing that kind of show work.

The history of transportation will show that the path of progress is literally paved with the broken bodies of those who believed *their* method was faster, safer and more convenient. Take the auto races at Indianapolis. A few people are killed in them but the things that are learned make your car and mine safer, faster and more durable.

Sure, some of these kids will get hurt and some of them will injure passengers. But maybe we will all learn something from their sacrifice. I still maintain that the most dangerous part of an airplane is the part that holds the controls. I have not lived to a ripe old age yet, but I have learned that we don't make progress without making mistakes, and I say, "If the end justifies the means, let the chips fall where they may."

I do not approve of the exhibitionist who comes into town and puts on a series of death-defying stunts that put "ideas" into the heads of most of the students. The average student doesn't know his weakness or the airplane's either. When he tries some of the stunts performed by GI Joe, just back from the Air Corps, the undertaker usually gets a rush call. My old instructor gave me a bit of advice I'll pass on to others. "Kid," he said to me, "when you do acrobatics, get your altitude *underneath* you and get plenty because altitude doesn't do any good above you."

So now, Ed, let me close with an appeal to the youngsters: We old-timers are handing you the ball very soon. Carry it well down the field, be a sportsman and play it fair so that when the game is over you can look your fellow man and your Maker square in the face and say, "Shucks, I didn't do much—but I did the best I could."

T. H. DAVIS

PIEDMONT AVIATION, INC., WINSTON-SALEM, N. C.

THE other day it was my duty to co-operate with a civic organization which had asked one of the manufacturers whom we represent to send over a new ship for the big air show. Very few people saw my ship because the officials insisted that it be parked at the far end of a line of ships, mostly surplus. Anyway it was interesting to note that the local operator in this case was very disgusted because his usually healthy Sunday business was shot, inasmuch as his field was closed.

To top the whole thing off I understand that the poor civic club which had been roped in on the deal had expenses of $3,000 more than the "take." Nobody gained anything from this show except the show operators themselves and it appears very likely that the impression left with the general public was that airplanes are good only to play around in and perform daredevil acrobatics.

To sum things up let us ask ourselves the question, "Did automobile races put the automobile industry over the top?" I think not. I believe if Mr. Gallup should take a poll at one of these air circuses he would find that 90 per cent of the people go to them solely to see a crack-up.

In fairness to all concerned I think it is well to differentiate between the NAA-sanctioned shows and races, the local shows staged by aero clubs and the commercial air circuses. I believe there is no question among us that the NAA-sponsored Cleveland races, East and West Coast shows, air carnivals, etc., are definitely beneficial to the industry. The little shows and competitive events staged by aero clubs in which the participants are members of the clubs and mostly amateurs stimulate the enthusiasm of private fliers. The commercial air circus is an entirely different situation.

What we need is more programs designed to show the utility of the airplane and not how dangerous it can be. It behooves all of us in aviation to educate the civic organizations and show them that the air circuses will likely do more harm than good insofar as the promotion of aviation is concerned.

E. G. (SLIM) KIDWELL

CENTRAL AIRPORT, LOS ANGELES, CALIF.

THE only way that we can be successful in warding off daredevil air shows and air circuses is to educate not only the airport operators but all of the various veterans' organizations, chambers of commerce, and any groups that have ideas of running these shows as benefit performances.

When the Junior Chamber of Commerce contacted me last week, I was in sympathy with their need of raising money and very willing to help through Central Airport's facilities and the aviation business. I refused to

allow them to hold a circus but I offered to help sponsor a practical exhibit to take the place of a scary, noisy air show. The idea was accepted, and we will conduct this practical exhibit on Labor Day.

We will have two of each type of aircraft available for display. Fees charged for their display space will go to the sponsor. One model of the exhibitor's aircraft will be used strictly for display and the other will be on the flight line for safe and sane rides and demonstrations to prospective customers. Our "show" will draw as big if not bigger crowds as any air circus or air show.

BEVERLY HOWARD

HAWTHORNE FLYING SERVICE, ORANGEBURG, S. C.

MY general reaction to the situation can be best summed up by the old saying to the effect that it's not *what* you do, it's *how* you do it that counts.

I thoroughly agree that we do not want "scare shows," which have a carnival flavor with thrills, chills and defiances of death as the slant of the ballyhoo.

What we do want is shows staged in a constructive manner. An enlightened sales approach would reflect the true status of civil aviation today, would encourage the public on increased participation in civil flying, would correct false impressions about civil flying. Properly handled air shows could accomplish all that and still be entertaining to the spectators. In fact, I would go so far as to say that the promise of a show that demonstrates the many achievements of modern civil aviation would pull more people than the hair-raising kind. The public has been fed the harum-scarum stuff for years and could be expected to be quite tired of it by now, anyway.

Let us have air meets, but let's encourage aircraft service operators, chambers of commerce and other sponsors to be circumspectful about the people who are selected to set the tone for the affair and carry it through. In other words, make sure that the *manner* in which it is to be conducted is up to the standards we know can and should be maintained.

More specifically, let's encourage the sponsors to insist that the advertising and publicity stress the educational value of the show, insist that the man who handles the public address system be constructive in his comments on what is going on and not one of the "Oh! Oh! He's spinning out of control, he's going to crash. . . " types of characters. Announced properly, stunt-flying becomes an example of how strong, maneuverable and efficient modern types of civil aircraft are, not a cheap thriller. An exhibition by a sailplane becomes an example of its possibilities as a sport medium. The parachute jumps can be made demonstrations of life-saving equipment that has meant so much to our air forces.

This is a subject that is very close to me. But it all adds up to this—by insisting on demonstration and education as themes, sponsors of air shows can not only make out financially but they can make distinct contributions to the development of civil flying in their communities. Air shows can quite easily be turned into excellent sales media.

JAMES G. JOHNSON

SPRINGFIELD FLYING SERVICE, INC., SPRINGFIELD, MO.

THE air circus epidemic followed World War I and it was only natural that the past war would again bring it into play. The types of surplus ships available today are a far cry from what the boys had over 28 years ago. Properly handled they can put on a real show and give the public something to remember. While it is true that some wild-cat operators will fleece the public, kill a few wild pilots and ruin some good operator's future in the community, I don't see that much can be done about it.

Personally, I enjoy a good air show. I get a kick out of seeing the ships put through their paces by skilled pilots. It appears that a little education for the city fathers or county judges would be the best attack. If they were properly instructed to check on the would-be event and get the aviation operators in that vicinity or state to give them the approval, I don't think much harm, if any, would be done. Aviation has the public eye. The public has had some samples of Army and Navy "buzzing" and now they want a full dish all at one setting. I just don't believe you can stop this any more than you could horse racing. For years horses have fallen and broken legs and sometimes the jockey even breaks an arm or neck. It's a sporting event and the Americans have it in their blood with few exceptions, so we might just as well give it to them in the best possible manner.

TOM E. SMYER

SMYER AIRCRAFT SALES & SERVICE, PONCA CITY, OKLA.

IT is my opinion that something should be done about the air circus epidemic. I believe some benefits could be derived from this type show if it were properly handled and put on in a controlled manner. It is obvious that the control will have to be handled by the field involved with the co-operation of the show.

I believe more actual benefit could be obtained by other types of airport activity being put on with local talent. This could be in the form of spot landing contests, breakfast flights, etc., which can be controlled easily by the operators. The flying of controlled model airplanes creates interest and is one of the many interest-builders that can be used to get people out to the airport.

These methods will not attract as large a crowd at one time but will bring people out every weekend, which will be more beneficial to the operator and aviation in general.

WHAT'S YOUR QUESTION?

Operators are invited to submit as many questions as they wish for discussion in "The Operator's Forum."

The editors ask that you send only questions which are of interest to operators generally, and which require an opinion instead of a simple Yes or No answer.

Awaiting CAA certification, the new Seabee is undergoing continuous flight-testing under all conditions. Here's its latest portrait over the lake country of the Northeast.

FACTORY performance figures on Republic Aviation's all-metal four-place Seabee amphibian promise exceptional operation on land and water. With pilot and three passengers, 45 gallons of gasoline, 3 gallons of oil, 80 lbs. of baggage, the Seabee has a gross weight of 3,000 lbs. Take-off run on land, according to specifications, is 800 ft. while the Seabee needs 1,000 ft. to get off the water. Powered by a 6-cylinder, 215-hp. Franklin opposed engine, the amphibian is reported to have a top speed of 120 mph. and a normal cruising speed of 103 mph.

The Seabee has a cruising range of 560 miles and burns 13.5 gallons of gas an hour. Fuel capacity is 75 gallons; oil capacity is 13 quarts. Landing speed is set at 58 mph. and landing run on land is 400 ft. and 700 ft. on water. Rate of climb for the first minute is reported to be 700 ft. per minute and the Seabee's ceiling is said to be 12,000 ft. Wing loading is 15.3 lbs.; power loading is 14.2 lbs.

Equipment Listed

With an empty weight of 1,950 lbs., a useful load of 1,050 lbs. is claimed. The baggage compartment has a capacity of 20 cubic feet. The following equipment is listed as standard on the Seabee: Propeller, Aeromatic; starter, electric push-button type; battery, 60 amp.; radio, two-way; instruments, basic CAA instruments plus ball bank indicator; lights, navigation and anchor; mooring equipment, bow cleat and tie-down rings.

Maneuvering the Seabee on water requires about the same skill and knowledge of tides, currents, and winds as does any water craft, the manufacturer stresses. For easier water operation the Hartzell reversible pitch propeller is provided as optional equipment. This propeller permits downwind approaches to docks and backing away from beaches or obstacles. Cost of this optional installation is $333 if installed at the factory. First Seabee deliveries at press time were still awaiting final CAA tests on the all-metal amphibian.

JUST AMONG OURSELVES

(Continued from page 9)

fused by the welter of names and annoyed by rival appeals for support. The groups draw strength from each other and none can be strong enough to back community air progress as it should be backed. As these columns have pointed out innumerable times during years past, aviation is a house divided against itself.

The only answer is to form a local council of all interested groups wherein all maintain their identity but pool their resources. There should likewise be state and regional councils. The folks deep in the heart of this nation are tired of being managed out of Washington and New York. Decentralization is mandatory. It must come from local level organization.

If each national group appoints a delegate to a national council formed to work exclusively on the problem of organization a practical pattern for the merging of efforts in the states and communities will rapidly evolve. If, instead of spending time on high-sounding resolutions which will be read and forgotten, the Omaha convention of NAA will take steps then and there to form such a council, the NAA will be exerting the kind of leadership that the folks back home can follow.

It's time for action, and if NAA leadership assumes this pressing responsibility there's no reason why a united front of all aviation organizations can not be perfected by the time the National Aviation Clinic meets at Oklahoma City this fall. ★ ★ ★

PUSH-BUTTON POWER

(Continued from page 27)

With engines up to full power, the brakes are released and take-off roll is begun. The pilot engages the jet-boost unit so that it will be up to full thrust two seconds before the aircraft reaches 80 mph.—the speed at which rudder will control "yaw" resulting from loss of one engine. This takes 920 feet. The take-off run continues and 1,165 feet of runway will be used when a speed of 91 mph. is reached. At this point one engine quits. The run is continued on one engine assisted by the jet motor. After 1,660 feet of roll the aircraft will have attained a speed of 98 mph. and climbs to an altitude of 50 feet above the runway on one engine and the jet-unit. Total distance consumed in the take-off run and climb to a 50-foot altitude is 2,587 feet. Using single-engine procedure without jet assist, a DC-3 requires 3,261 feet to clear a 50-foot obstacle at 4,800 feet above sea level.

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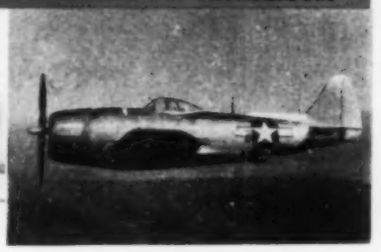

REPUBLIC P-47 THUNDERBOLT

MUNDY PEALE
General Sales Manager, Vice President and Director
Republic Aviation Corporation

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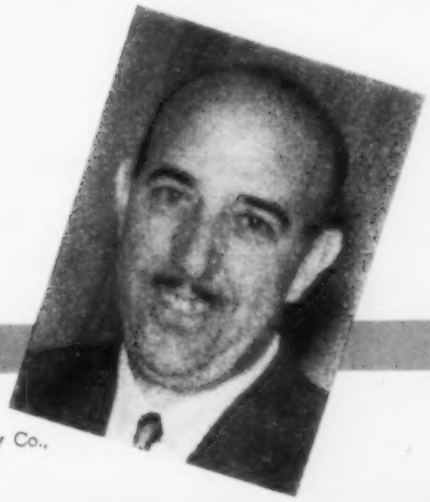

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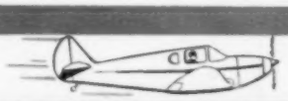

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VOL. V, NO. 5 JULY, 1946

Modern AIRPORTS

Model airpark for the nation is the $25,000 field at Eldon, Missouri, a town of 2,590.

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Friendly service swings cross-country traffic off the airways to America's small towns. Here's the author's Aeronca Chief gassing up at an out-of-the-way airport.

—(Hans Groenhoff Photo.)

NIGHT STOP

By DEVON FRANCIS
Associate Editor,
Popular Science Monthly

THE Chief glided slowly toward the end of the runway. Air speed 65. Nose a little low. Just a touch on the trim tab so she would squat nicely. Now the end of the runway fled past. She was floating. Hold her off. It was a nice feeling, sitting there for that fraction of a second before the plane became ground-borne. Then we were down, but with a little excess speed. I had to ease forward on the wheel.

"So this is Martinsburg," remarked my passenger, half to himself. "They roll up the sidewalks at 9 o'clock." And we were stuck here for the night. We had no idea, at the moment, what the next twelve hours held for us.

I had best explain. I am a middle-westerner by birth. The people in my town were friendly. But with the passing years I moved to ever-bigger cities. The people were less friendly. I didn't run into my neighbors' apartment. They didn't run into mine. More often than not, I didn't even know my neighbors. It was that way in a big city. After almost twelve years, New York had done strange things to me, and subtle changes had occurred in the character of my association with my fellow man. If a man did me a favor, I knew there had to be something in it for him. If I did another man a favor, there had to be something in it for me. I had become pretty sharp about money matters, too. Everybody was out for my dollar. They would charge me all that the traffic would bear, and I had to be careful or I would get cheated. New York does that to you. So does Chicago, I imagine, and Philadelphia and Detroit and Boston and Los Angeles.

So now we were stuck in Martinsburg, Pennsylvania, for the night.

I taxied to the cross-runway and up to the little hangar a stone's throw from a CAA station. I parked and cut off the ignition. We climbed out. No one was around.

"Better watch the ship," I said to my companion, "while I investigate."

Caught Off Guard

There were two men in the CAA office. I inquired about a hotel. They welcomed me to the telephone. "Oh yes," a woman answered, "we have rooms." She sounded rather pleasant. But then all hotel keepers sounded pleasant when there was money to be made. "Have you had dinner?" she asked.

It was getting pretty late in the day. The question didn't surprise me. She was angling for an extra dollar. "No," I answered, "we haven't." I was glad of a chance to eat. "We'll be in as soon as we can get a taxi."

She was still pleasant, and her voice had a curious warmth to it. "You don't have to do that. We'll come out after you."

That puzzled me. In the back of my consciousness I began searching for reasons. She was being nice for reasons.

While we waited for the car we unloaded the bags from the plane. A young fellow in his late 'teens or early twenties approached.

"I'm afraid we can't get you in the hangar," he apologized, "but we'll tie you down well. The plane will be all right."

I didn't like that. "I haven't a key for the door," I said. "Someone might get into the plane overnight."

He looked blank. "Oh," he said slowly, "I don't think so. No one ever has, on this airport." Then, as further reassurance, he added, "I'm an instructor here."

I rather liked my initial contact with the town. But I still kept my guard up. We talked. I felt vaguely uncomfortable. All these people were being simple and direct. Yet I had to refuse to accept them on those terms. I liked this kid. He liked to fly. I liked to fly. We talked planes. I thought about the warmth of the woman's voice on the telephone and the casual friendliness of the men in the CAA office.

"That's a brand new Chief, isn't it?" remarked the young fellow of my airplane.

"Yes," I replied, and then for no good reason at all I blurted out, "Want to fly it?"

I bit my tongue, too late. My generosity was running away with me.

Yes, he certainly would like to. He coaled up and taxied out. I watched, thin-lipped. Well, anyway, I said to myself, the ship is insured. I shouldn't have let all this country bumpkin atmosphere get under my skin.

In a moment the Chief was airborne, and then suddenly the automobile from the hotel had come, and we loaded the bags in, and off we went down the road.

The dinner, I had to admit, was magnificent. Then we went for a walk.

That's the author calling the tower, with flying companion Hans Groenhoff, the noted aviation photographer, doing the navigating.

It was a nice town. The houses looked as though they had just had their faces washed. Back at the hotel, I inquired about breakfast next morning at 6:15. "Ordinarily we don't serve until 6:30," said our hostess, "but I'll get up fifteen minutes early, that's all." I waited for the payoff, and in awkward silence I said, "But I can't ask you to do that." But she said, "I'd like to," and that was that. I was still trying to find answers, but not as hard as I had been.

"And about transportation to the airport. Now—"

"My sister will be glad to take you out, or the man who runs the airport will come by for you. He'll be glad to."

All this was cockeyed. Anybody could see that. People didn't act this way.

Good Folks Make Good Towns

In bed we lay there in the darkness. It was quiet, so quiet I could hear a smothered laugh far away.

"Dick," I said, "are you asleep?"

"No."

"What do you make of all this?"

"The town, you mean." He paused. "It's funny. You live in a city and you get pushed around, and you learn how to push other people around, and then you come to a town like this." He paused again. "You've still got your dukes up. It's hard to understand people. I mean, it's hard to understand people who live in towns like this."

"Maybe," I said, "it's the other way around. It's hard for them to understand us."

I could hear Dick sigh. "I guess this is part of America that we don't know much about. There's a lot more of this kind of America than there is of the kind we know."

"Amen," I said.

In the morning the man who ran the airport called for us. He was young. He had been a fighter pilot in the war.

I was still having a hard time understanding my hinterland. "But why did you set up business in Martinsburg?" I asked him. "You know — bigger towns, more business, and all that." I was making a lame explanation and I knew it.

He shrugged. "It's a nice airport, and I don't live far from here, and there's plenty of business—"

I gave up. Somehow, somewhere, I had acquired some awfully funny ideas about living.

When the ship was gassed and we had loaded our baggage, we climbed in. The engine took, and I taxied over the dewy grass to the runway. Oil temperature. Oil pressure. Trim tab. I checked the ship as we snaked down to the intersection and turned on the takeoff runway. At its end we stopped. Brakes locked, throttle open. Tach, temperature, pressure, mags, recheck trim, altimeter, carburetor heat.

(Continued on page 48)

Identify Your Airport

By JOHN H. FREDERICK

IT was Emerson who wrote: "Write a better book, paint a better picture, or build a better mouse trap, and though you live in the heart of the forest, the world will beat a path to your door."

This has a lot of truth in it provided the world hears about you and provided someone else does not waylay the world on its way through the forest with almost as good a book, picture, mouse trap or airport. This is so because there is also a lot of truth in this other saying: "There never was a product made, this truth you must confess, but what someone could make it worse and sell his stuff for less."

Every successful business is built upon selling the public a product as good as it can buy for less money; a better product or service for the same money; or some new product or service which will provide more convenience, comfort, pride of possession or happiness, than the money will buy elsewhere. All selling is based on this fact.

It is more important for an airport manager to let people know about his services, which are his products, because airports are more often in out-of-the-way places than anywhere else. So why do so many airports handicap themselves by making it hard for strangers, or even residents of the town they serve, to find them? In many cases all that needs to be done is to put up a sign.

Tell The Public Where You Are

Large and small towns hide their airports; not from the air but from those trying to find them on the ground. At one large town a main highway leads into a street on which you turn right if you are going to the airport. This is an ideal place for a sign with an arrow pointing in the right direction, but up to a few weeks ago there was no such sign there. There are too many such examples.

In other towns we see weatherbeaten signs displayed at the turnoff point for the airport. In other cases the signs are there, but unless you look closely you don't see them because of bushes or tall grasses that have grown up around them. Does anyone do anything about such concealed and therefore useless signs? Does the airport manager, passing these signs every day, stop some morning with a pair of pruning shears and again make the sign visible? The answer is "not yet" in many a town. Despite what Emerson said, the world is not beating a path to such airports.

A sign is the cheapest sort of advertising. There is another place where a sign can do a lot and that is at the airport itself. When passengers land at an airport a sign will tell them where they are. The DC-3 has been a sort of intimate passenger vehicle. The passengers have been close together, the hostess has passed between them and has sometimes announced the place of landing, yet how often has one been asked, "What place is this?" Now we are getting larger, less intimate type airplanes. Many passengers will not know where they are unless a sign is displayed, because they will not bother to deplane to wander around since better facilities will be provided on the plane. Planes will stay level and it will be more comfortable for passengers to remain in their seats. How nice it would be to look out a window and see the name of the town. In how many airports can one do this? Not very many. So put up a sign!

Here are two worthy projects for local chapters of NAA, for service clubs, for chambers of commerce, or perhaps for the airports themselves. Make it easy to find your airport on the ground. ★ ★ ★

Definite flight patterns, if enforced by well managed airparks, will virtually eliminate nuisance to property owners outside the mile-and-a-half operations zone indicated in the drawing. Note straight ahead climb after take-off; continued climb in turn.

Kansas City's Zoning Plan

By G. RICHARD CHALLINOR
Aviation Commissioner, Kansas City Chamber of Commerce

A ZONING plan for airparks in agricultural and residential areas, developed by the Aviation Department of the Chamber of Commerce of Kansas City, provides for standards of construction and general appearance of airpark buildings satisfactory to the owners of surrounding real estate.

In developing the plan, two established facts were considered:

1. Small airparks such as the one illustrated would be used primarily for light, privately-owned aircraft.

2. Standards set out by the Civil Aeronautics Authority point out that aircraft taking off from these small fields will reach a minimum altitude of 400 feet before leaving the operations zone (any point one and one-half miles from the take-off point).

Since aircraft at all well-managed landing fields must follow definite flight patterns, it is assumed that all property owners outside of the mile and a half area should not be overly concerned with private aircraft flying over their homes.

Meet Construction Standards

The Aviation Department's plan requires that the proposed airpark operator secure the assessed valuation of all real estate improvements in the operations zone from tax records. Only the valuation of improvements above the ground is considered. When the actual value has been established, an average is determined. The Board of Zoning Adjustments then knows the average property values within the operations zone and will require the operator to adhere to minimum standards of construction, maintenance and physical appearance in and around the airpark.

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More Airparks

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Housing of private planes and provision for adequate landing areas are major problems for returning veterans and others in the Kansas City area who wish to continue the aviation training they received before and during the war. Experts agree that Kansas City's geographical location is one of its greatest assets, yet they warn its citizens that it will be necessary to take full advantage of this strategic location to receive the benefits derived from the fast-growing field of aviation.

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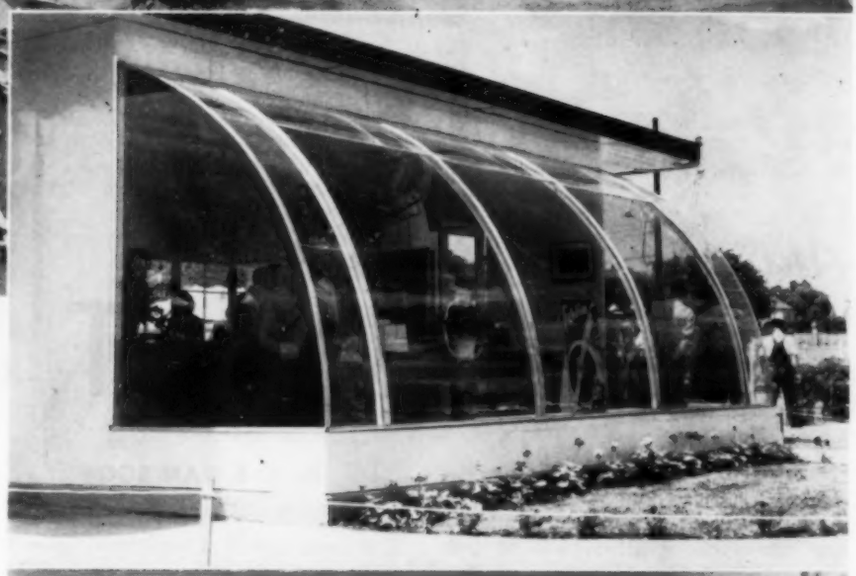


Plane directly above is taxiing on Eldon's E-W runway, which is 2,000 by 300 ft. NE-SW runway, 2,300 ft., crosses picture from left to right. Administration building and 4-plane hangar are at right.
(Max Burk Photos.)

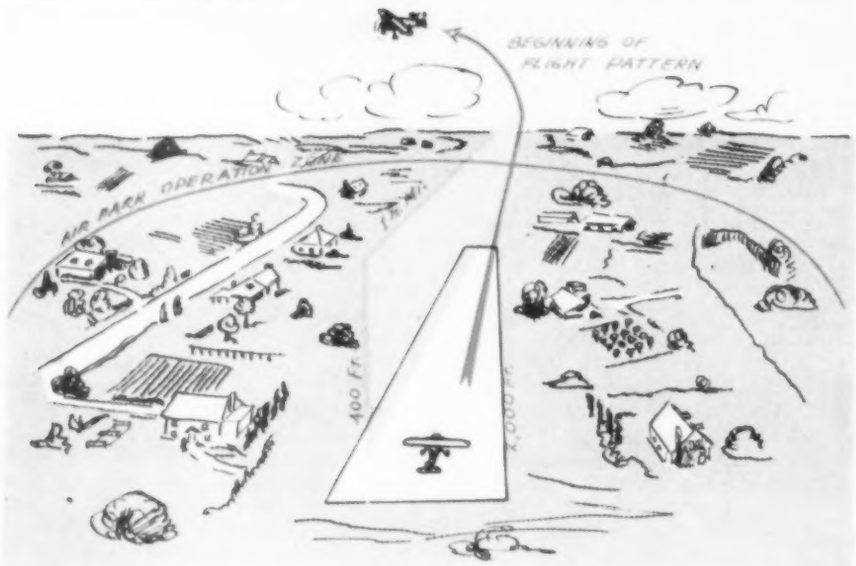
Eldon's Airpark

THE story of Missouri's recently completed model airpark at Eldon is likely to be duplicated again and again as air-minded communities move to keep pace with the growth and demands of private flying. Completely financed by a community of 2,590 at a cost of $25,000, the Eldon project became a model for the entire nation.

Located five blocks from the Eldon business district, the turf airpark has E-W and NE-SW runways (top), a modern prefabricated all-steel administration building, a four-plane hangar and will have a small park and nine-hole golf course. The administration building (top right) cost $5,000, has curved Solex windows and contains office, telephone booth, control tower and two-way radio (bottom, right).

The Shell Oil Company, which was awarded a contract for sale of aviation fuels and lubricants by the City of Eldon, developed the airpark's refueling unit (right, center), which is virtually a service station on wheels.

Dedication ceremonies attracted many government and aviation officials, including Jennings Randolph, West Virginia's flying Congressman (bottom, standing at left); Joe Geuting, Personal Aircraft Industries Association; E. V. Fryhoff, originator of the Eldon Airpark idea and head of Missouri's state aviation department, and John Geisse, assistant administrator of the CAA. Pilots, kneeling, were unidentified in the rush. ★ ★ ★



Definite flight patterns, if enforced by well managed airparks, will virtually eliminate nuisance to property owners outside the mile-and-a-half operations zone indicated in the drawing. Note straight ahead climb after take-off; continued climb in turn.

Kansas City's Zoning Plan

By G. RICHARD CHALLINOR
Aviation Commissioner, Kansas City Chamber of Commerce

A ZONING plan for airparks in agricultural and residential areas, developed by the Aviation Department of the Chamber of Commerce of Kansas City, provides for standards of construction and general appearance of airpark buildings satisfactory to the owners of surrounding real estate.

In developing the plan, two established facts were considered:

1. Small airparks such as the one illustrated would be used primarily for light, privately-owned aircraft.

2. Standards set out by the Civil Aeronautics Authority point out that aircraft taking off from these small fields will reach a minimum altitude of 400 feet before leaving the operations zone (any point one and one-half miles from the take-off point).

Since aircraft at all well-managed landing fields must follow definite flight patterns, it is assumed that all property owners outside of the mile and a half area should not be overly concerned with private aircraft flying over their homes.

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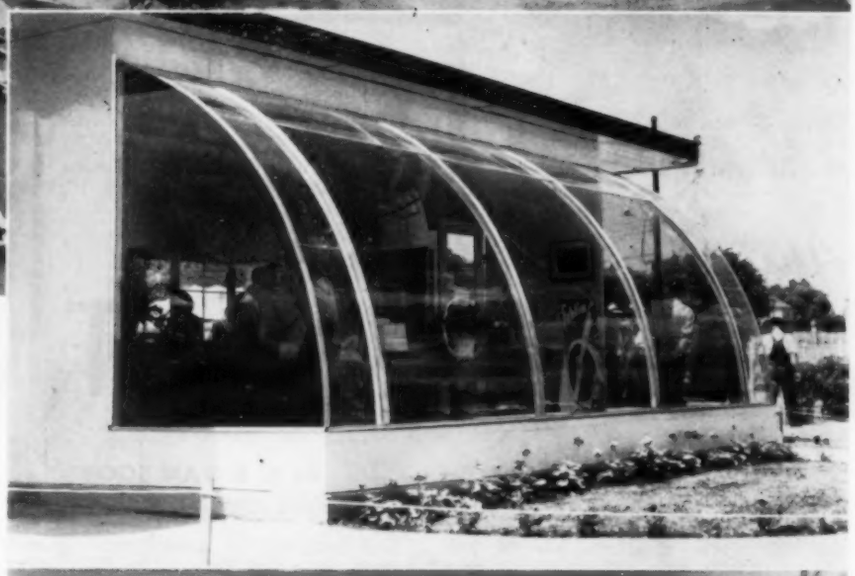

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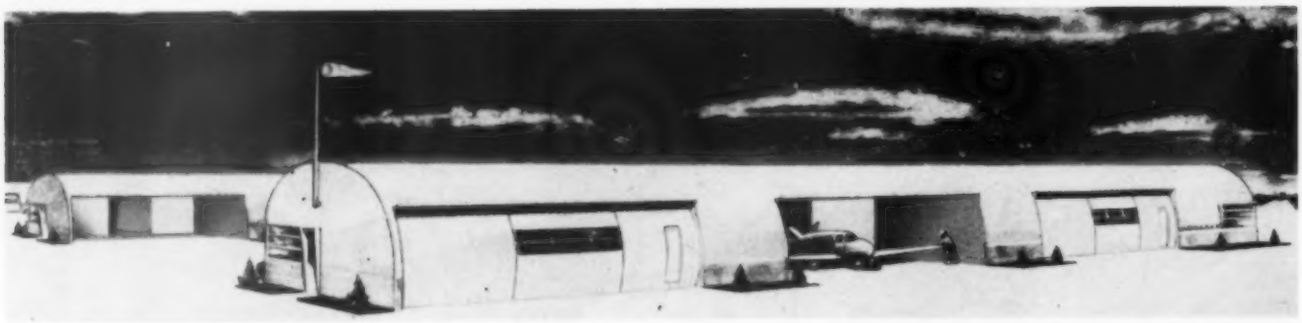


All-steel radial hangars, locked together in multiple units, provide maximum storage with a minimum of space. Steel wall between planes acts as added fire protection and gives owner strict privacy for his aircraft.

Answer to the Storage Problem

Radial Multi-T Hangars

By K. E. VAN SCOY

WITH only one-third of the private and commercial aircraft under cover, thousands of planes are out in the weather. Add to this the prediction that thousands of new aircraft are being sold this year and, with no new hangar facilities being produced in quantity, it is easy to see that the country is faced with a tremendous shortage of hangars. Frankly, it seems that the rapidly mounting interest in private flying might catch a great many airport operators with their windsocks down.

With the object of providing low-cost hangar space for the average private plane owner, the Butler Manufacturing Company of Kansas City made an exhaustive study of hangar problems and needs. Two years were spent consulting leading fixed-base operators, municipal airport managers, airplane manufacturers, airline executives and private fliers. Here are some of the company's findings:

There is a need for two standard sizes of hangars for private aircraft: 1. A hangar with a horizontal span of from 40 to 42 feet, a vertical clearance of 9 to 10 feet and an overall depth of 30 to 32 feet. This hangar will house the Cub type aircraft. 2. A hangar with a horizontal span of approximately 52 feet, a vertical clearance of 12 feet and an overall depth of 36 feet, to house the twin-motored, executive type aircraft.

The first hangar will vary in cost from $600 to $3,000, depending on the material used and the frills added; the second hangar will probably cost from $1,200 to $5,000—the type door used being the major cost item.

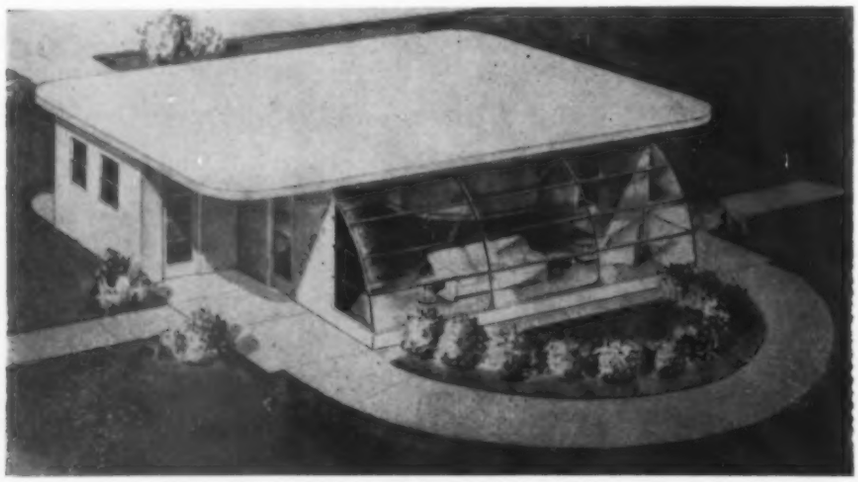
The average private flier is galled by having to store his plane with several other aircraft in one hangar. Frequently that means he must depend on two to six other persons keeping the hangar locked; his craft is subject to the carelessness of others in storing and removing planes; if one plane catches fire, they all go. There is also a steady chorus of lamentation from fliers on the subject of hangar doors. It would seem that hangar portals are almost a national aviation calamity.

These are a few of the reasons why Butler designed a hangar for the individual aircraft owner. Both the private flier and the operator benefit with multiple-T, radial hangars. In the Butler hangar, the private aircraft owner has an individual "port" for which he has lock and key, permitting storage of his car when the aircraft is removed. In case of fire, each steel wall of the individual hangars acts as a firebreak. This relieves the operator of considerable responsibility.

As for doors, the cheapest door is the accordion type and the sliding door is the most widely used. Both types are frequently hard to operate. Butler engineers designed an overhead door which can be either motor-driven or hand winch-operated and can be easily opened in a matter of seconds. While this is not a cheap door, by comparison with the accordion and sliding types, it will save many man-hours for the fixed-base operator. Also, hangars must be as easy to enter as a residential garage if women are to be interested in aviation.

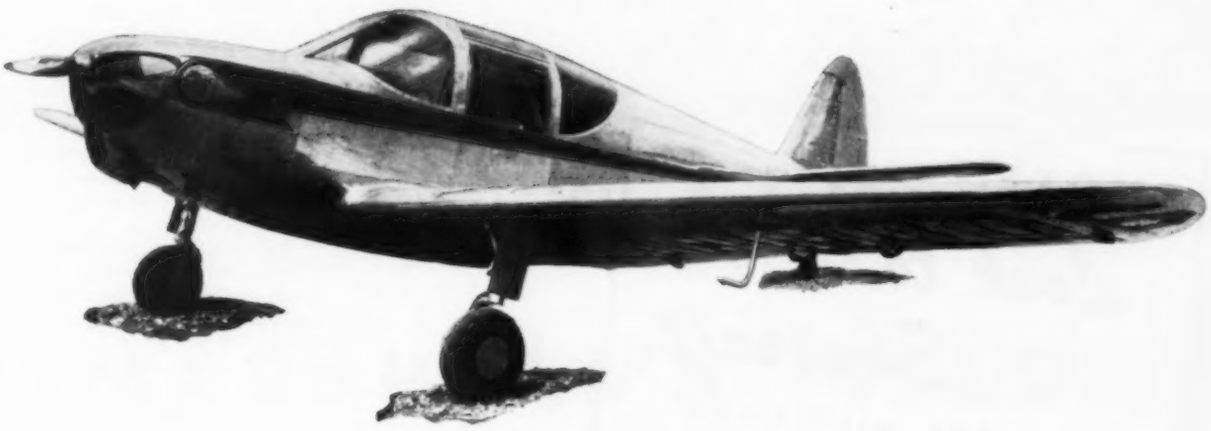
In designing the multiple-T radial hangar, the Butler company considered these factors and many more. The hangar had to have utility plus a reasonable price. It had to have beauty, and it had to house the greatest number of aircraft in definite groupings.

With the Butler T-hangar, the fixed-base operator can start modestly with the multiple-T hangar and, as he adds to his facilities, the cost per unit drops materially. In this way, he invests a minimum of capital. On the other hand, the hangar space he buys originally never becomes obsolete, since the multiple-T hangar can be enlarged or moved as the need arises. ★ ★ ★



The administration building at the Eldon, Missouri, model airpark is of all-steel construction and was specially designed for the Eldon project by the Butler Manufacturing Co.

Aristocrat of personal airplanes



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JOHN KENNEDY, President

Administration of $500,000,000 in Federal funds recently authorized for a national airport program will be handled by these men, all members of the Washington and regional staffs of Charles B. Donaldson, CAA's assistant administrator for airports. Standing, from left, Phillips Moore, Chief, airport engineering service; Edgar N. Smith, Chief, airport planning service; and John Hunter, airport requirements service. Others are airport supervisors from the various regions. From left, seated, Paul Morris, Seventh, Seattle; Herbert H. Howell, Fifth, Kansas City; H. Harvis Perkins, Second, Atlanta; R. W. F. Schmidt, Sixth, Santa Monica; Donaldson; S. E. Travis, Jr., Fourth, Fort Worth; Lane Wilcox, Third, Chicago; and W. E. Cullinan, First, New York.

Airline Company Urged to Operate Terminals

The McGoldrick report on air terminals, recently submitted to the board of directors of the Air Transport Association, recommends that air carriers establish a joint company to operate airport terminals. Based on studies made at five cities — Chicago, Peoria, Detroit, Denver and Memphis — the report concludes that ground costs are excessive with airport workers idle more than half the time due to duplication of terminal services. In addition, the report estimated that $1,000,000 a year might be saved at the five airports studied if improved operating methods were adopted in the handling of passengers, freight, mail and express. Lack of uniform practices, insistence of the airlines on individual staffs, and lack of planned, co-ordinated scheduling were stressed as contributing to high cost factors.

Write us now for information about "Skycraft" dealer opportunities.

NIGHT STOP

(Continued from page 43)

I throttled back and wheeled into the wind.

Then we were rolling, and in a moment the wheels were unstuck and spread below us was our valley. There was the airport, laid out with arithmetical precision, and beyond were the hills, purplish in the morning light. Below was the town with its yesteryear's soda fountain and its church with a worn footpath across a corner of its lawn, and people who didn't mind getting up fifteen minutes early, and a young man who had come back from a war to root himself in a soil that he knew and understood.

"All set?" I asked Dick as a belated afterthought.

"All set. Next stop is Pittsburgh."

"Yes," I said, "I know. Let's not think about it." ★ ★ ★

CAA Forms for U. S. Airport Aid Readied for September Start

Civil Aeronautics Administration officials are in the process of drafting policies into regulation form preparatory to beginning projects in the national airport program. The regulations will probably be completed for public dissemination on or about September 1 and until that time no application forms will be available to communities and it will not be possible for prospective sponsors to file application.

CAA men are strongly urging that all communities interested in the development of airports start their planning now.

Meanwhile, $52,000,000 of Federal funds for construction purposes are being provided in appropriations now near final action in the Congress, and $3,000,000 is being made available to institute CAA planning and administration of the projects. Employment of engineers and airport specialists by CAA regional offices is a major item. In the Fourth Region, the Airports Branch expects to establish six district offices at Baton Rouge, La.; Little Rock, Ark.; Oklahoma City, Okla.; Santa Fe, N. M.; Austin, Texas; and Big Spring, Texas.

New Booklet on Floatplanes and Bases

"Air Harbors," a booklet published by the Edo Aircraft Corporation of College Point, L. I., and now available, is written around the theme that air harbors are ready-made airports. The booklet emphasizes the economy and speed with which floatplane bases can be installed and operated. Prime requirement is merely a fixed or floating platform costing a few hundred dollars.

"Air Harbors" also outlines basic requirements in establishing floatplane bases for business or pleasure flying.

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Love Field, Dallas, Texas

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Atlanta Leads Nation in First Airport Traffic Report

First in a series of monthly CAA summaries of airport traffic, issued last month for April, ranked the ten leading cities according to total number of take-offs and landings made by civilian aircraft. Atlanta, Ga., with a total of 3,841 civilian arrivals and departures, led the list. The next nine airports, in order of civil traffic volume, follow: Tulsa, Okla., 2,318; Houston, Texas, 2,094; Chicago, 2,032; Dallas, 1,985; Newark, 1,842; Ft. Worth, 1,787; Washington, 1,779; Cleveland, 1,749; and Indianapolis, 1,502.

ETCO Leases Greenville, Texas, Airport Facilities

Executive Transport Corporation has leased hangar and field facilities at Majors Field, 50 miles northeast of Dallas, from the City of Greenville and Hunt County, Texas. The former AAF establishment will be operated as a municipal airport. According to D. A. Fowlie, ETCO president, facilities will be used for the modification of C-54 and C-47 type aircraft. More than one hundred employes, largely returned AAF mechanics, were hired during the last week in June.

Blasting Aviation's Scoffers

C. R. Smith, president of American Airlines, struck out recently at critics and disbelievers with a statement to his employes reaffirming his confidence in aviation expansion. His statement, significant because of the faith and enthusiasm it expresses, follows:

"We have been busily engaged this week, endeavoring to raise additional capital for American Airlines to pay for the airplanes we have and the ones we have on order.

"The capital will be raised; we will receive the money which we require; and we will continue to meet our obligations as they arise.

"This whole job has been made more difficult by some people in our business. As an example, some of the airplane manufacturers, including companies from whom we are buying airplanes, have expressed the opinion that the airline industry, and perhaps American, in particular, have 'overbought.' They have even been saying we will never fill the airplanes that we have purchased. This seems to be a lack of confidence in the industry, or a lack of faith in the future of air transportation.

"On top of that, some of our principal competitors in the airline business have been spreading the word that American has 'gone crazy'; that there will never be an increase of six to eight times in this business within the next few years. Let them be responsible to their own people for this little faith and this little confidence in the developing world of the air age.

"It is unfortunate that some people who make a living in this business, or make a living supplying this business, do not really believe in it. Air transportation would be better off without some of the critical old crones who are drawing their livelihood, directly or indirectly, from the industry.

"We are shooting the works on this program, with the utmost of confidence. We do exactly that for the reason that we believe in America; we believe in air transportation; we believe in American Airlines; and we believe in you. Let's make these senile scoffers look silly. You can do it."

Mansfield, Ohio, to Open New $2,000,000 Class 5 Airport; Elaborate Club Restaurant Features Service to Fliers

Arrival of the B-19, famous large airplane, will highlight the July 20-21 opening of Mansfield, Ohio's new $2,000,000 Class V municipal airport. Covering 1,200 acres, the new field has the highest elevation of any airport in Ohio—1,259 ft.—and was built on land and purchased by the city with runway system and landing area constructed by the CAA.

Work on the field was started in 1944 with a CAA allocation of $600,000. Additional CAA allocations were made during the war, bringing the total cost to $2,000,000. The field has four 5,600 by 150 ft. runways—two hard-surfaced and two sodded—and two of these have 1,000 ft. safety strips at each end.

The Sky Club—a $125,000 operation in connection with the airport—is said to be one of the finest and most luxuriously appointed airport restaurants in the country. Management is directed by Lt. Col. Robert E. Durkee, recently retired from the AAF and former manager of LaGuardia Field's restaurant and airline food service.

Mansfield's $125,000 Sky Club (shown at right) was designed as an "aviation country club". Second floor dining room, lower left, seats 150, is reserved exclusively for members of the flying fraternity. Main floor dining room and soda fountain, lower right, are open to the public.

21 Louisiana Airports Opened Since January 1

Twenty-one Louisiana airports have been placed in operation since January 1, according to T. B. Herndon, chief of the state Aeronautics Division. In addition, Herndon reported 12 more airports under construction or on paper. Louisiana has 6 seaplane bases. The radio range station at Alexandria has been re-established and a new range station was commissioned May 10 at Baton Rouge. All of the above progress, Herndon said, was made without depending on Federal aid money.

Louisiana's ten-year development plan, utilizing Federal aid, calls for 70 new airports and 25 seaplane bases plus the enlargement and improvement of many existing facilities. The state has its own plane.

Hanst Resigns

The City of Dallas has been interviewing former military officers of high rank in an effort to obtain a superintendent of airports. Charles Hanst resigned recently as manager of Love Field to accept a similar post at Corpus Christi. Hart Bowman is the city's aviation director of public relations.

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N. T. WOMACK J. O. ("Toots") WOMACK N. T. WOMACK, JR.

Simplified construction of the all-metal wing is seen in the wing panel at left. One of the panel's two ribs can be seen just to the left of the jig post. The only other rib is already covered (far left). Strips on inside of skin are rolled hat sections. Lower photo shows Luscombe's broad expanse of smooth metal skin. Note single strut.
—(Luscombe Airplane Corp. Photos.)

Luscombe's New All-Metal Wing

SOMETHING new — an engineering accomplishment of far-reaching possibilities in lightplane manufacturing—has been added to the 65-hp. Luscombe Silvaire. It is an all-metal wing having but four ribs, two in each panel, and replacing the formerly used fabric-covered wing in which were 26 metal ribs, 13 to each panel. In addition, the new wing incorporates a single, non-welded strut replacing the previous V-strut and jury struts.

Described by Luscombe Airplane Corporation at Dallas as "probably the greatest single postwar development in lightplane design now available to the public," the new wing greatly simplifies manufacture, makes the Silvaire the only all-metal lightplane in volume production today, and is described as adding five to eight miles per hour to the airplane's speed.

Approved by the Civil Aeronautics Administration and already in production, the new wing consists of a metal shell structure built around front and rear extruded metal spars. The four ribs are located near the juncture of the wing and fuselage. Torsional and drag loads are carried by the wing's stressed skin, which is installed in nine panels, each being replaceable. Due to the absence of internal structure, periodic inspections can be conducted almost entirely externally, as only two inspection openings per wing are required, for aileron pulley brackets and wing tank gasoline connection, as compared to thirteen on each wing in the fabric covered design.

The metal skin, riveted to rolled hat sections, is smooth from root to tip. However, its trailing edge is corrugated and upper and lower surfaces are riveted together to form the trailing edge.

No Weight Gain

Luscombe says the wing is aerodynamically cleaner and faster and has shown excellent stability and improved stalling characteristics in flight tests. The dimensions are approximately the same as those of the fabric-covered wing, but the tip is a bit more squarish. The metal wing weighs about the same as the fabric-covered one.

L. H. P. Klotz, president of Luscombe, said the metal wing's extremely simple design results in ease of production as well as greatly reduced repair costs. "The lifetime all-metal construction eliminates the several hundred dollars required every year or so to recover wings employing fabric covering," he said. "Badly damaged sections may be repaired with facility and without replacing the entire wing. Durability of the metal skin means that the wing will withstand ice, snow, hail and fabric rot common in the tropics. All-metal construction greatly reduces the fire hazards inherent in fabric and dope construction."

Simplification speeds production, removes last of fabric, improves performance and reduces maintenance.

Production at Luscombe's factory is being steadily expanded and in late June was running at a rate of fourteen airplanes daily. A total of 276 Luscombes was manufactured during the thirty-day period ended June 25, and 300 are scheduled to be produced during July. Since January 1, 1946, Luscombe has manufactured a total of 1,004 airplanes.

Development of the metal wing has made possible a greater acceleration of production, since it eliminates many man hours which were required in making the old wing's metal ribs and its assembly, covering and painting.

Luscombe is the pioneer in lightplane all-metal structures, having been in this field more than twelve years. Many improvements have been incorporated in the Silvaire since then, and additional developments can be expected during the next several months. The company is devoting its efforts chiefly to simplifying construction.

★ ★ ★

No. 6 IN A SERIES, *featuring some of the 700 Esso Aviation Dealers throughout 25 states*

MR. W. W. EDMONDSON, *manager of Lynchburg Air Transport and Sales Corporation, Lynchburg, Virginia is famous not only as an Esso Dealer and successful airport operator, but also as a skilled and daring stunt flier. His stunts vary from outside loops and inverted flying 15 feet above the ground to dead-stick landings from 5,600 feet. Fuels are especially important under such conditions — and "Woody" Edmondson uses and sells Esso Aviation products.*

"Esso Products have increased our Transient Trade!"

SAYS OPERATOR EDMONDSON

"In over 6 years we have never had a single complaint about Esso aviation gasoline or oil. And in this time our gallonage has climbed continually. Furthermore, we have found that by using Esso products our transient trade has increased considerably indicating that we have a good selling point right in the name Esso."

NO WONDER Esso has helped increase the business of many an airport operator—every big gun in the arsenal of hard-hitting sales promotion and advertising stands ready to back up our 700 dealers! And every one of our products is backed up by over 40 years of aviation experience, over 2000 research scientists and the industry's largest aviation test cell.

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Alberta Air Associates, Inc., Alberta, J. L. Boland, Ashland; A. A. Rucker Airport, Bedford; Garner Aviation Service, Chester; J. D. Lincoln, Chilhowie; Southern Airways of Danville, Danville; Brickert Oil Company, Farmville; Garner Aviation Service, Fredericksburg; Coiner Flying Service, Front Royal; Galax Airport, Inc., Galax; Gordonsville Municipal Airport, Gordonsville; Shenandoah Airways, Harrisonburg; Hummel Aviation Service, Hopewell; Garner Aviation Service, Hot Springs; Lawrenceville Flying Service, Lawrenceville; Leesburg Air Service, Leesburg; E. N. Bare Flying Service, Lexington; Lynchburg Air Transport & Sales, Lynchburg; Ashburn Flying Service, Manassas; Montross Flying Service, Montross; Buford Aviation Service, Inc., Route 460, Montvale; Narrows Airport, Narrows; Glen Rock Flying School, P. O. Box 2362, Norfolk; Norton Aviation Service, Norton; Petersburg Municipal Airport, Petersburg; Peninsula Airways, Phoebus; Pulaski Municipal Airport, Pulaski; Clinch Valley Airways, Richlands; Central Airport, Richmond School of Aviation, Richmond; Roanoke Municipal Airport, Roanoke; John Eure Aviation Service, Suffolk; Virginia Air Service, Warrenton; Waverly Municipal Airport, Waverly; Richmond School of Aviation, West Point; Aviation Service, Inc., Scott Field, Williamsburg; Garner Aviation Service, Windsor.

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Our four-acre store—"The YARD"—in downtown Wichita, Kansas, is jammed with many times 1,001 items needed by airport operators and shops, aircraft owners, manufacturers, and pilots at money-saving prices. Come in and see for yourself, or write, wire, or phone us your needs.

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SPECIAL BARGAINS While supplies last, we offer: Mixed AN spec dural rivets, 30c lb.; mixed AN bolts, 15c lb. New air compressors, 5 HP Briggs engines, deliver 12 c.f.m. air at 210 lbs. pressure, $378.75 less 20% for resale. New aircraft cable, flexible .203" dia., 6 x 7 strand, 5c per foot. All prices f. o. b. Wichita, Kansas.

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"The YARD" is the display center for our nation-wide service of supplying aircraft and other industries with material, equipment, machinery, and supplies in new or serviceable used condition, from Government surpluses and commercial sources. Whether you need one item, or carload lots, we can supply you if it exists . . . often at far less than market prices. Our experience in redistributing millions of dollars worth of surplus during the war and afterward will save you time and money.

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FOR EVERY PASSENGER

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Illustrations show how quickly and easily the IRVIN CHAIR CHUTE affords its protection:

1. Slip arms into the side straps
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When the passenger rises the chute comes with her.

The increasing use of private cabin planes by business executives has led many companies to insist that their officials and guests have this protection. There's no sacrifice of decoration, comfort, practicability.

New illustrated catalog giving details of all types of IRVIN packs sent on request.

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Complete Factories in Buffalo, N. Y., Glendale Calif. (1500 Flower St.), and Lexington, Ky., U.S.A.—Canada, England and Sweden.

SOUTHWEST PARACHUTE CO., Leon McKennon, President
4347 Lovers Lane, Dallas, Texas

Distributor for Texas, Oklahoma, Arkansas, Tennessee

Praise for Good Service

IT has been a long time since we were as agreeably surprised at airport service as we were the other day at Houston Municipal Airport. The control tower instructed us to taxi over toward the hangar row where we could get a cab, gasoline, and everything we wanted right there. The operator told us also that if we would call him before we left (and he gave us his telephone number) he would have the ship all ready so we would lose no time at all. When we came back, our plane was ready for us and the bill was made out. All we had to do was give him our courtesy card. In a few seconds we were on our way.

Most people do not do as well with the facilities they have at hand as they could. There is a personality to every business and generally it is the personality of the manager. Unfortunately, most managers or owners either do not know or do not really care about giving the customer the kind of service that pleases him. Strangely enough, it costs no more to give good service than it does to give poor service.

At any rate, we were extremely well impressed with J. D. Reed's service in Houston and we certainly will look forward to going back there many times. His hangar was clean, his rest rooms were clean, the attendants had instructions to give excellent and courteous service and everything was "bang-up" as far as we were concerned. That certainly contrasts with service we have had at some airports in the United States. The time is rapidly approaching when competition is going to require a great deal more courtesy and service than it ever has previously. We don't know what will happen to the people who fail to see the handwriting on the wall but those who do see it and do give the courtesy and service will certainly take all of the business away from the other people.

OPA and the Hangar Shortage

IN connection with the reconversion program, which has not been accomplished on schedule, we feel that OPA is 100 per cent responsible for its breakdown. A great many people are crediting the OPA with what little improvement we have had in general business conditions. However, we personally think they are simply riding on established coattails and have had nothing whatsoever to do with it. In fact, OPA's misrepresentation and mishandling of practically all raw and semi-finished products has been so bad as to completely freeze practically everything. Incidentally, the other day we had an example of the fact that competition still works and can control prices much better than OPA. We went into a new airport building in one of our larger southern cities and found they had all manner of lumber, plumbing materials, tile, concrete, machinery and other supplies on hand and were proceeding to build. We asked them how they had been able to get all of the materials, to which they replied that as much as they hated to they had been forced to buy on the black market. We presumed they had to pay through the nose, but the answer was no, that there was so much competition among the black marketeers that prices were about the same as they were in the legitimate places. This completely refutes all OPA arguments that prices would go completely skyhigh if the OPA did not exercise control over them. Here is a concrete example showing how black marketeers had slipped completely out from under the control of the OPA but had eventually to fall in line due to competition.

It is perhaps a very good thing that not too many new airplanes have become available because there would be very little hangar space for them. They would have to be staked out in the open, and nothing increases airplane maintenance like standing out in the weather. Also, nothing is as unpleasant to an owner as wiping cobwebs, dirt, coal dust, and everything else off a bright, shiny, expensive airplane improperly cared for due to lack of facilities. We urgently hope a way will be found to construct many times the hangar capacity we now have as it is certainly needed.

Airmen's Calendar

July 18-21—World's Fair of Aviation, Omaha, Nebraska.

July 19—Organization Meeting Flying Farmers of Minnesota, St. Paul.

July 19-20—NAA National Convention, Omaha.

July 20-21—Mansfield, O., Municipal Airport dedication and "Sky Show".

July 26-27—NAA Joint Private Flying Conference, Milwaukee.

July 29-30—NAA Joint Air Youth Training Conference, Milwaukee.

August 1-2—National Flying Farmers Association First Annual Convention, Stillwater, Oklahoma.

August 2-4—Observance of 20th anniversary of air passenger service, Grand Rapids, Mich.

August 3-18—National soaring contest, Elmira, N. Y.

August 24-25—Denver International Air Show, Denver, Colo.

August 30-Sept. 2—National Air Races, Cleveland, O.

Sept. 4-12—St. Louis Indoor Air Fair sponsored by Aviation Council of Metropolitan St. Louis.

The other day we were fit to be tied when it started in to hail hailstones as big as hen's eggs. Our twin-engine Cessna was tied down on an airport. Fortunately, it didn't hail over the airport, thereby showing that the Old Man still has His arm around us, but if it had hailed like it hailed downtown we would certainly have had a number of airplanes to be re-covered.

Simple Instrument Flying Needed

SOMETHING has to be done about the inability of private airplanes to negotiate stinko weather safely and it's got to be done simply, cheaply and fast. Otherwise, a lot of people are going to get hurt. The other day we had to go to New York and in checking the weather found it was going to be nearly zero-zero for a week. We got on the train and went to New York, and while there found the railroad people were about to go out on a strike. We were in Washington on Saturday afternoon and the strike was supposed to take place at 4 p. m. Ten minutes before the deadline a truce was declared for five days, which permitted us to breathe a sigh of relief. We went into the railroad station at 7:30 to catch the 8:05 train. The red caps refused to pick up our baggage, there was a great deal of anxiety and uncertainty everywhere, and no one knew whether the trains would run. At 8:05 the train was on the track, but it couldn't leave until after 11 o'clock for some reason or other. All the while it was raining lustily. Many times the top of the Washington Monument and the tops of little hills were shrouded in fog. We knew that had we attempted to fly to New York and back and maintain schedule, we would have been unable to do it except by being on instruments most of the time. Even instruments would not have helped us since LaGuardia Field cancelled a hundred and some odd flights in one day by airliners equipped with the finest instrument equipment and the best pilots.

The same week, a transport crashed, killing 27 people, and two or three private planes cracked up, killing several others—all reportedly due to weather conditions.

To us this means we simply must have some simple, reliable instrument flying procedure and equipment. Obviously small airplanes cannot carry radar equipment and most owners cannot afford it. Since it doesn't hurt anything to dream, we wonder why

there couldn't be something as simple as putting on a pair of glasses that would permit the pilot to see through fog, smoke and so on. Until there is something of that nature, instrument flying is not going to be successful and safe. Nothing on earth can take the place of vision. It seems that about 85 per cent of all knowledge and observation comes by way of our eyes and only by being able to see clearly and over a great area can flying be accomplished successfully.

As a matter of fact, such a system might not be as fantastic as imagined. Some sort of lenses, together with a light or wave motion, must be able to penetrate fog and smoke satisfactorily. This would mean that only a piece of transmitting equipment in the nose of the airplane and a lens pickup system would be required. We anxiously await development of such a gadget.

Air History at Smithsonian

WHILE in Washington, we took a little time for another visit to the aviation section of the Smithsonian Institution. Anyone interested in aviation can get the whole history of flight by going through that building. The first show case you see as you enter contains many examples of animals and birds who have to some extent mastered the art of flight. Immediately over that show case are several dozen wing designs which have been tried on airplanes. Some of those developments are presently used.

The models of the first ideas people had of flying machines may be seen, along with descriptions from the patent offices of the devices people hoped would fly. It is a far cry from some of these first models and actual airplanes to the slick aircraft of today.

The institution has kept completely up to date and in addition to all the old, old airplanes, there are models of the very latest ships, some not yet off the drawing board. A jet airplane is displayed along with many of the fighting machines of the last war. It was interesting to note that some of the names inscribed on World War I airplanes, first transcontinental and around-the-world ships, are names of leaders in aviation today.

The experience and the evolution immediately evident are outstanding and show we have come a long way. No one in the early days ever imagined the slick speedy airplane we have today.

Even more interesting to me was the evolution in engine and propeller design. Looking at the old engine that towed the original Wright Brothers airplane makes one realize it was a miracle man flew as early as he did. Those people tried to and did accomplish things with low-powered, unreliable, weak and spindly engines that are amazing when one takes everything into consideration.

We have witnessed a good part of the evolution of flying. The first time we ever saw an airplane fly, Lincoln Beechie flew it on the 4th of July, 1913, in City Park at Denver, Colorado. There was no airfield and he tried to take off on a smooth piece of park lawn. At that altitude the ship refused to get off. Finally, since he didn't get paid unless he flew, Beechie taxied his ship over the edge of a small cliff, got up enough flying speed, and gave a creditable performance.

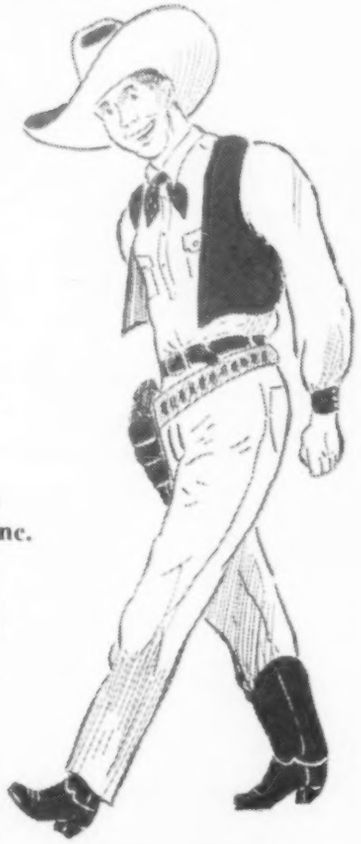
That airplane looked very similar to a box-kite and it is a miracle to us that it even held together. Years later, Billie Parker rebuilt an old craft of somewhat similar design and flew it for a number of years.

Evidence indicates the airplanes of thirty years from now will probably look very little like the ones we are accustomed to. The only thing we hope is that they become simpler and easier to fly and that greater strength can be built into even greater lightness. Most people will never be able to afford heavy aircraft. Weight, if performance is to be obtained, always means high horsepower and high fuel consumption. These mean high operating costs. We must have high-performance, low-weight, high-capacity, high-speed, cheaply-operated aircraft. We will bet the next few years see a great deal of advancement along those lines. ★ ★ ★

YOU ARE INVITED . . .

TO Roy Taylor's AERONCA party, August 3, 1946, on the 10,000-acre Elkan Ranch located 25 miles North of Hobbs, New Mexico. A real RANCH party; plenty of barbecue, refreshments from kegs. For your entertainment — a real Western branding party, wild cow milking contests, spot landing contests on mile long runways, outdoor dancing. Bring your bedroll and wear your cowboy clothes.

Just tear out the coupon below and mail it so we'll know you are coming. We'll send you complete directions to the spot.



ROY TAYLOR, Southwest Aircraft, Inc.
Meacham Field, Fort Worth, Texas

YIPPEE! Count ..... persons in for the big **RANCH** party August 3rd. We will fly ..... or drive ..... arriving ..... A. M. or P. M., Saturday.

Name .....

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STRICTLY TECHNICAL

(Continued from page 12)

compressibility effects on airfoils and control surfaces beginning at about 610 mph. But Wright Field aerodynamics experts believe such difficulties exist only within the narrow confines of the 600-900 mph. bracket, that they disappear in higher speed regions. Men have died attempting to prove this belief, but new tests are scheduled, and this summer will probably see an AAF test to attain 1,500 mph. in a piloted aircraft which, though its details are still secret, was shown to writers during last month's Wright Field press tour.

The newest AAF supersonic design is the XS-1, a rocket-powered, bullet-nosed, stub-winged little single-seater which is launched in midair after being carried aloft beneath the bomb bay of a B-29. It has already been successfully flown, stalled, maneuvered and landed, but without power. Installation of a rocket engine is to precede the next test, and the AAF believes its tremendous power will accelerate it rapidly through the 600-900 mph. compressibility zone and on into speeds of 1,500 mph.

Of the many spectacular technical advances brought about by war, these show significant trends which will have a far-reaching effect on commercial aviation development. ★ ★ ★

E. W. "POP" Cleveland
The Landing Gear Man

Pioneers for over 50 Years

1894-1946

For half a century, The Cleveland Pneumatic Tool Company has devoted itself to serving many major industries.* Skilled technicians and experienced engineers within our organization have pioneered and perfected many products for each of these fields. Thus initiative and resourcefulness have enabled us to keep abreast of this country's remarkable industrial progress . . . We are proud to have grown with our nation for 50 years, and look forward to serving in the great future that lies ahead.

**CLECO Pneumatic Tools speed production in metal-working plants. AEROLS (the shock absorbing landing gear used so universally on aircraft) insure safe, smooth landings and take-offs. CLEVELAND Rock Drills are widely used in the mining and contracting fields.*

THE CLEVELAND PNEUMATIC TOOL CO., Cleveland 5, Ohio

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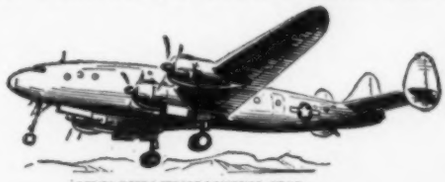
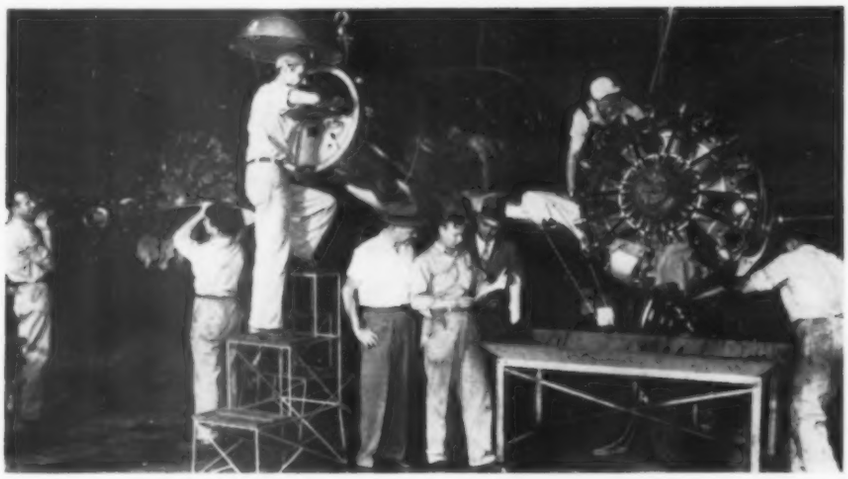


AEROL RETRACTABLE LANDING GEAR

CLECO AIR TOOLS

CLEVELAND PNEUMATIC



Pilot F. M. Johnson (left), Foreman E. L. (Ma) Green (center) and co-pilot F. N. Thompson study Beechcraft Model D18S factory service bulletins as a 100-hour inspection begins. Green jots down pilot recommendations, then incorporates any changes required by factory bulletins.

100-HOUR

Today's 100-hour check requires over 140 separate aircraft and engine checks. On these pages, the Shamrock Oil and Gas Corporation's twin-engine Beechcraft D18S goes through the important project.

By AL HARTING

IT wasn't so long ago that the only aircraft inspecting devices were a pair of human eyes and an all-purpose screw-driver. Checks in those days weren't necessarily made every 100 hours. If the engine held together and kept turning over, well and good. If she started acting up in flight or falling to pieces, it was time to pry her open for an "inspection."

Fortunately, those days are now legend. Today's scientifically-conducted 100-hour inspection is an important project requiring over 140 separate aircraft and engine checks. A typical present-day 100-hour inspection, as performed on a twin-engine Model D18S Beechcraft, is shown on these pages. The airplane, a Shamrock Oil and Gas Corporation Beechcraft assigned to President J. H. Dunn, was recently flown to Dallas for a 100-hour inspection at Southwest Airmotive, Inc. F. M. Johnson is Shamrock's pilot and F. N. Thompson is his co-pilot and crew chief.

George Kelly, aircraft shop superintendent, and E. L. "Ma" Green, aircraft foreman for Southwest Airmotive, first conferred with the pilots before beginning the check. After jotting down the "pilot squawks" Green listed new modification and changes dictated by recently-received official service bulletins. Thompson and Johnson okayed these bulletin changes. Then Kelly turned the inspection over to Green, a veteran of 16 years aircraft experience, and Earnest E. Hansen, engine expert who has been in the business "so long I can't remember when I started."

The history of each customer's airplane is kept up-to-date in Southwest's files and reference to past inspections and repairs is made each time the craft returns for service. With this continuing history go copies of the check list used by both the engine and aircraft departments, with each item of work initialed by the man responsible. A report of modifications made in accordance with service bulletins is kept at Southwest Airmotive, while other copies go to the factory and also into the plane's log.

The Inspection Begins

The rigorous inspection process began with the removal or opening of all cowlings, fairings and inspection plates. Gasoline and oil sumps were drained. Following a careful going-over for oil leaks, the engine was cleaned and the landing gear and tail assembly sprayed to clear away the veil of dust.

By means of hoists and jacks, the plane was "airborne" to look into retractible landing gear mechanism. Operation of the retracting doors was carefully observed and an inch-by-inch inspection made for worn or malfunctioning parts. Dry, powdered graphite was applied to the slide tubes; wheels were removed, bearings washed, checked, repacked and re-installed. On special jobs, tires and tubes are removed.

C. G. Crump and H. G. Hearn (lower left) bleed the brakes with special portable "jeep" equipment. At lower right, with the airplane hoisted off the floor, Ray Campbell cleans a half-retracted main landing gear before inspecting it for possible breaks or deterioration.

INSPECTION

"Ma" Green went from one inspection plate to another, armed with a stethoscope-like light and mirror at the end of a long, flexible length of wire. Thrusting the device into skin-openings, he studied the reflected interior for structural cracks, corrosion, loose rivets and the security of safety fasteners, pulleys and control cables.

Radio and Transmitter

A representative from the radio shop checked radio transmitter and receivers and a delegate from the instrument department followed to check the instrument panel. Faulty pieces were removed to be hustled back into the shop for specialized treatment. An electrical and accessories man examined the ship's wiring. Propeller-man Scottino and his aides had already removed the propellers for a minor repair job and a major inspection.

Engines

Ernie Hansen, according to George Kelly, is "the only man I ever knew who was both a good pilot and an expert mechanic." Ernie flew for two-and-a-half years and was with Lockheed before coming with Southwest Airmotive.

"Every engine is different," Ernie declares. "As a matter of fact, two engines on the same airplane usually can be expected to require different treatment.

"I'm particularly careful about oil leaks—before the engine is cleaned I make sure that no oil is dribbling out. Gaskets on rocker arm bolts have to be checked especially carefully. We check the compression on each individual cylinder with a pressure gauge. Now, some engines will fool you. On one type, for instance, you don't get much pressure when the engine is either dead-cold or only slightly warm. But after she turns over for a while the pressure comes up fine. If a man didn't know that particular engine's personality, he could make a mistake.

"I check the fuel system with the wobble pump and we lay a wrench on every nut and bolt. I see that a drop of oil goes on each magneto and that the points are 100 per cent okay. We also make sure that controls are oiled and greased and that there's no binding.

"Time was when a lot of people in the flying business thought that the little things in an airplane could get along with just a little bit of inspection and maintenance," George Kelly declares. "But nearly everyone concedes today that it's these little things that count—together they make up that big and all-important factor spelled S-A-F-E-T-Y." ★ ★ ★

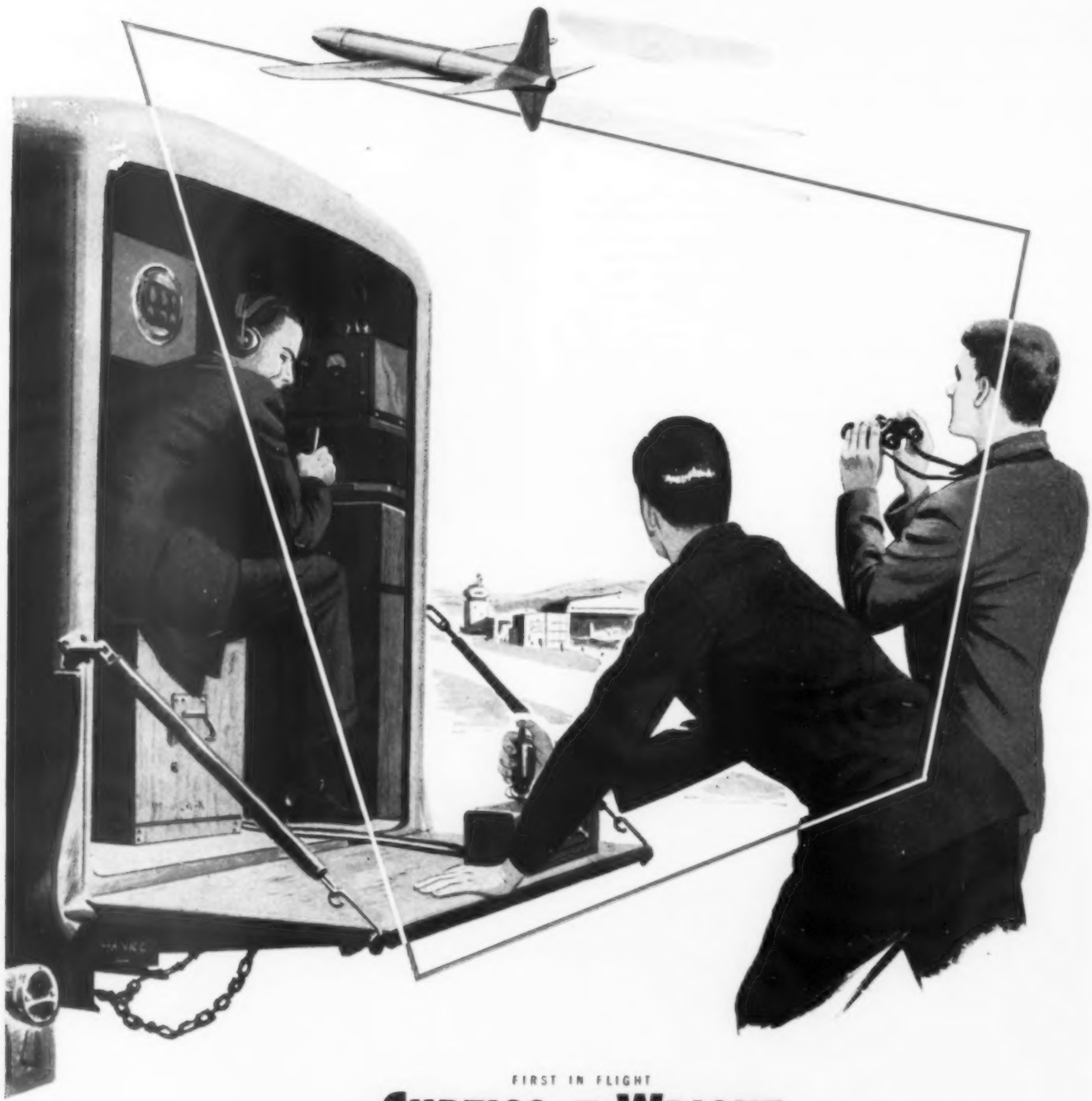
Above, Hearn and Crump attach a spring scale to the handle for manually raising or lowering flaps and gear. By exerting upward pressure on the handle, they determine how much pull the landing gear clutch will withstand. In this case it was 150 lbs.

Below, at lower left, Crump uses a cable tensometer to test tension on control cables, while E. L. Green (right) checks the innards of the elevators with a tiny mirror much like the kind used by dentist.

—(Tom W. Collins Photos.)

test pilots on the ground

Telemetering — the instantaneous transmission of flight information to instruments on the ground — has opened new fields for obtaining scientific data on objects in flight. Whether piloted or pilotless, their exact behavior can be accurately determined during the entire flight, providing the engineer with information for further research and development. Combined with newly developed electronic control devices, this achievement of Curtiss-Wright research represents another advance in the era of supersonic flight.



FIRST IN FLIGHT

CURTISS WRIGHT

Airplane Division

COLUMBUS, OHIO

Developing Flight to Meet the Future.

Use of air cargo planes for bringing in Piper Cubs has solved transportation problems of the Larson Alaskan Distributing Company, Piper distributors for Alaska with headquarters at Anchorage. Two such delivery flights have been made and four more are scheduled. Three Cubs are carried at a time.

Competitive bidding closed July 1 on 20,000 surplus bombers, reconnaissance planes, fighters, and other types of tactical aircraft put up for sale "on the hoof" at five major airfields. Successful bidders paid ten per cent down, will pay the balance during the period specified for clearance of the field, and may rent the fields on which the planes are located at the rate of one dollar a year while scrapping operations are in progress. Nine months were allowed for clearance at Albuquerque, N. M., twelve months at Clinton, Okla.; fourteen months at Kingman, Ariz.; nine months at Ontario, Calif.; and twelve months at Walnut Ridge, Ark. The 20,000 planes—suitable only for scrap or salvage—were estimated to contain 200,000,000 pounds of aluminum alloy and other metal.

Three new representatives were recently named by the Aircraft Screw Products Co., Inc., manufacturers of Heli-Coil screw thread inserts and the Aero-Thread screw thread system. D. Lynn Churchwell, Lone Fountain, Va., was named representative for North Carolina, Virginia, W. Virginia, Maryland, Delaware, and the District of Columbia. Carl H. Henry, Atlanta, Ga., was assigned South Carolina, Florida, Georgia, Alabama, Mississippi and Tennessee; and R. H. Wixson, Dallas, will represent the company in Arkansas, Louisiana, Oklahoma, Texas and New Mexico.

The Spartan School of Aeronautics, Ercoupe distributor for northeastern Oklahoma, has been giving flight demonstrations at Tulsa. Spartan's territory includes Ottawa, Delaware, Adair, Sequoyah, McIntosh, Muskogee, Cherokee, Mayes, Wagoner, Pawnee, Noble, Payne, Craig, Nowata, Washington, Roper, Tulsa, Okmulgee, Creek, Osage, and Kay Counties.

An 18S Beechcraft has been purchased by Bendix Radio Division for use in radio and electronic research. W. P. Hilliard, general manager, revealed the twin-engined plane will carry both experimental and standard Bendix radio equipment as well as the Pioneer electronic pilot. Research activities will be under the direction of Ruel Colvin, flight research engineer.

The Magnolia Petroleum Company recently purchased a new twin-engine Model D-18S Beechcraft and, using the plane in conjunction with other company-owned aircraft, has set up an "air transport service" to better schedule transportation for officials, technicians, and engineers. Flight schedules will be made up in the same manner as commercial air reservations. For serving light meals in flight, a small buffet arrangement has been provided. Major Sam Willis, veteran of World War II and former Magnolia employe, will pilot the new plane.

An application for permission to operate a helicopter taxi service between the airport and the Wurzburg department store in Grand Rapids has been filed with the Michigan Aeronautical Commission by Northern Air Service. O. C. Hall, operator, revealed that 8,000 persons go to and from the Grand Rapids airport each month. At present, the time consumed by ground transportation is nearly half the flying time between Grand Rapids and Detroit or Chicago.

A new formula for rating aircraft risks has been prepared by Aero Insurance Underwriters with rates on individually-owned aircraft varying from as little as 5 per cent to as much as 20 per cent of aircraft value. Using an elaborate field organization of underwriters and inspectors, the company has scientifically calculated rates according to each owner's particular risks.

The company has abandoned mileage and area restrictions on insured aircraft, according to George L. Lloyd, general manager, who explained that 'rating of an aircraft risk involves many factors besides area of operation. The capability of the pilot and his adaptability for the use to be insured, the care and upkeep of the aircraft and so forth all have a bearing on the

Forty floats per week is the present production rate of the Edo Aircraft Corporation, which recently set up additional production facilities. As of the second week in June, the company had made twice as many all-metal lightplane floats in 1946 as were manufactured in any previous entire year by Edo. Anticipated total production 7 times better than in any previous year is predicted for 1946.

risk." While estimating aircraft risk is far from simple, Lloyd declared his company's rate formula would be practicable "if applied by a field underwriter with the necessary local knowledge and then checked by an inspector in the course of his routine safety inspection. In this way, there is reason to hope that a procedure for rating aircraft risks has been introduced which will be of lasting benefit to aviation."

Twelve aircraft manufacturers have placed orders for General Electric two-way personal plane radios, officials of the company's electronics department have announced.

The set weighs twelve pounds and its plug-in package design permits the radio to be removed or replaced in a private plane instrument panel in ten seconds. Both the transmitter and receiver are in the same unit which is about the size of a small loaf of bread. Separate power supply completes the unit. Factory production now totals 800 units a month, GE officials said.

Protection for fliers from sunburn is promised by an ultraviolet-absorbing type of "Lucite" acrylic resin developed by DuPont. Created for use on warplanes, the plastic sheeting has already been specified for windshields and enclosures on several lightplanes. The new material is manufactured in clear and green transparent sheets, the latter offering anti-glare properties in addition to filtering out the harmful portion of ultraviolet. Other uses planned for the sheeting include tops of taxicabs, windshields and windows on locomotives and boats, special transparent plastic tops for convertibles, and windows for homes.

A new DC-3 heating unit, weighing 50 pounds less than the system used on most DC-3's, is designed to fit in the baggage compartment and, through thermostatic control, will keep cabin temperatures within plus or minus 2 degrees. The packaged heater makes possible both heat and ventilation when the plane is on the ground and engines are not running, something not possible with previous systems.

The heating package—contained in a 12-inch by 15-inch by 49-inch fabricated aluminum alloy jacket—can be replaced for servicing and inspection in 15 minutes, according to the manufacturer, the Surface Combustion Corporation of Toledo, Ohio.

BEX UT-30, an odorless concentrated washing compound, is reported a safe cleaner for any surface to which water may be applied. The compound is chemically neutral, forms a stable mixture when diluted with water, and has no adverse effect on skin, cloth, metals, or plastics. Manufacturer, the Gaybex Corporation, P. O. Box 7, Nutley, N. J.

Housed in a light-weight plastic "bubble," a new 4-inch loop, designed by William P. Lear of Lear, Inc., recorded only six-tenths pounds drag at 180 mph. in recent tests. The tiny loop and its plastic housing are part of Lear's new light-weight automatic radio compass. Another innovation included is the use of a servo unit which automatically rotates the loop to the usual null position when tuned to any particular station.

All-plastic "Flight Time Charge Calculator" measures 6¼ inches in diameter, is easily read and simple to operate. Designed to eliminate all costly "pencil and paper" errors, calculator quickly computes exact amount of rental fees when flight time is placed alongside cost per hour. Glencraft Company, 124 West Fourth St., Los Angeles, is the manufacturer. Distributor inquiries are invited.

Two cleaning and polishing preparations—Airline Metal Polish and Flaxoap—have been developed by the Sherwin-Williams Company of Cleveland, Ohio. The metal polish was used extensively during the war for cleaning and polishing the large wing and tail surfaces of B-29's. The polish easily removes grease and dirt, the manufacturer claims, but cautions against using the polish on anything but metal portions. Flaxoap is a linseed oil soap which will not discolor or harm any fabric-finished airplane, the manufacturer declares.

A new heavy-duty alkaline-type detergent specially designed to use in steam guns and soil-type steam-generating mechanisms has been announced by Oakite Products, Inc. Pretested during the past year, Oakite Composition No. 92 has proved efficient in cleaning machinery and equipment parts for subsequent repair and overhaul, preparing equipment surfaces for repainting or refinishing, cleaning equipment too large for tank immersion, and paint stripping and other cleaning operations. A free service report describing Oakite Composition No. 92 may be secured from Oakite Products, Inc., 57 Thames St., New York City.

Lightplane Deep-Freezer

Light-weight deep-freezer for private fliers will carry refrigerated food, beverages, and cracked ice or cubes. If dry ice is used, unit will maintain zero and sub-zero temperatures for two full days and longer, depending upon conditions of use. Entire unit weighs 25 pounds; measures 24 by 16 by 15 inches. Outer case is laminated plastic and water resistant. Dry ice is carried in detachable compartment holding 13½ pounds. Manufactured by Calplasti Corporation, 8364 Beverly Blvd., Los Angeles.

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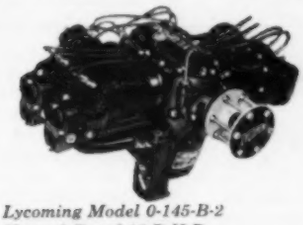

Lycoming Model 0-145-B-2
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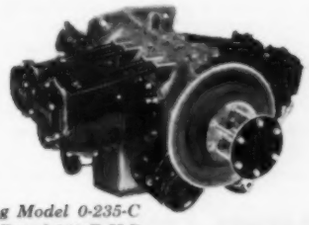
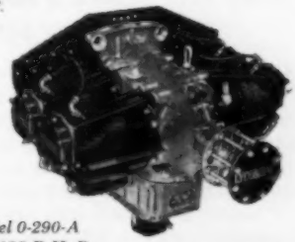
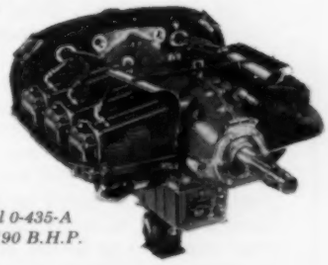


Lycoming Model 0-235-C
Normal Rated 100 B.H.P.



Lycoming Model 0-290-A
Normal Rated 125 B.H. P.



Lycoming Model 0-435-A
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Convair Has 3 New Lightplanes and XA-44, XB-46 Jets; XB-36, World's Largest Bomber, Begins Texas Tests

Of twelve different types of airplanes being manufactured or developed by Consolidated Vultee Aircraft Corporation, two are new jet-propelled military types and three are new commercial types for the private flier.

The Corporation's annual report to stockholders, just released, identified the two new military models as the XB-46 medium bomber, under construction at San Diego, and the XA-44 attack plane, being built at Fort Worth. The Convair XB-36, world's largest land-based bomber, is undergoing taxi tests at Fort Worth while a number of B-36 production models of the six-engine, 10,000-mile bomber are in production there. No details have been released on the jet-propelled XA-44 and XB-46.

New lightplanes being developed at San Diego include the two-place Spratt design, which is maneuvered by tilting its wing; the three-place Gwinn pusher and the five-place pusher Sky Coach. In addition, the San Diego plant is building the Army's newest liaison airplane, the all-metal L-13; the Convair Model 240 twin-engine airliner; the XC-99, military troop transport version of the six-engine bomber, and several secret projects including pilotless craft and missiles.

Its Wayne, Michigan, plant is producing the 4-place Stinson Voyager 150 for the commercial market.

The annual report listed a backlog of unfilled orders totalling $264,910,000 and reported a revised net income of $6,748,932 for 1945. An operating loss for 1946 is expected because of reconversion, labor difficulties and developmental projects, but relief provisions of the current tax law will probably reduce the loss materially.

Major Independents Ask New Type Certificate to Fly Cargo Exclusively

Organization of the Independent Airfreight Association, Inc., was announced in June by Harry W. Prescott, president. Trustees are heads of three of the largest air cargo companies and all are pilots and World War II veterans. These include Prescott, president of the National Skyway Freight Corporation; Earl F. Slick, president of Slick Airways, Inc.; and Harry R. Playford, president of U. S. Airlines, Inc.

The association was formed, Prescott said, to "gain recognition for this established business as distinct from the subsidized airlines carrying passengers, mail and express." The association will ask the government, through the CAB, to recognize essential differences inherent in the transportation of freight by air as distinguished from carriage of passengers, property and mail, Prescott added. They seek only fair competition and therefore insist that they should not be compelled to compete with airlines that benefit from "taxpayer handouts," he emphasized.

The Association will ask that the government establish a classification for air carriers engaged solely in carrying freight under which the companies may be licensed to operate as common carriers. At the present time they have no license.

Why Not Insure Pilots at Their Own Value?

By DOT LEMON

A MAN recognized as a leader in aviation told me recently that skill was going to be taken out of flying. That will be the same day they take thunder out of a storm. It's a sad thing that prospective buyers have to be told pixie tales and balderdash in order for them to be sold something as nice as an airplane.

I believe among the sacred rights of man should be included the right to kill or maim one's self and spend one's own money. Why don't insurance people insure a pilot, or an aircraft sales and service operator, at his own value? It is not right or fair for a pilot or a man with a clean operation to be required to pay the same insurance rates as the battle-scarred individual who got his wounds through his own personal stupidity and lack of skill.

As handy as all insurance men are with numbers and a pencil, it shouldn't be too difficult to whip up a plan whereby a man is insured and rated by his past record. If he has 500 hours and no accidents the rate is stabilized. For every accident he has for so many hours the rate goes up. He is rated in groups of A, B, C, D, etc. When an operator hires a pilot, he would ask to see his insurance card. For example, the pilot might be in Group D with a red card—that would mean he had 4-6 accidents in 1,000 hours of flying. The operator would know whom he was hiring. An operator should be insured in ratio to the claims for which he has applied. A man with a small operation of eight to ten airplanes, who has put in claims for five broken props, three landing gears, two wings and a washout in a twelve-month period, should be put in Group D. As the accident rate goes down, the insurance rates would come down.

Some way or another we are going to have to make pilots and operators pay for their own mistakes. We should not ask or expect the ones who have steered clear of trouble to help the erring ones pay. The day may come when one may push a button and find himself air-borne, push a selector button for an automatic heading already figured out by the oil companies, and whither away. But that day is not here, and the more accidents we have in this period of transition the farther it will be across the horizon. ★ ★ ★

CAA Approves 125-hp. Version of Globe Swift

CAA certification of the new all-metal 125-hp. Swift has been announced by the Globe Aircraft Corporation of Fort Worth, Texas. Designated the GC-1B, the 125 has a maximum speed at sea level of 150 mph. and a cruising speed of 140, according to the manufacturer. Landing speed is 48 mph., a 650-foot take-off run is required, and the plane has service ceiling of 16,000 feet. The company also listed cruising range at 512 miles on 28 gallons of gasoline and a rate of climb of 1,000 ft. Sale price will be approximately $4,400.00.

Non-Scheduled Carriers, Periled by CAB Plans, Seek 3-Cent Mail Loads

Proposed CAB restrictions on non-scheduled air carriers would seriously curtail operations and make it impossible for most carriers to operate profitably. This was the opinion of more than 70 independent airline representatives as expressed by Brig. Gen. Lawrence J. Carr, president of the newly organized Institute of Air Transportation and representing the independent operators.

Disclosing that a brief answering the CAB's proposed restrictions had been submitted to the President, members of Congress and government officials in addition to the CAB, Gen. Carr said the independent airlines would ask for the right to carry airmail at 3 cents and air parcel-post at rates considerably lower than present charges.

"Our airlines have been described as non-scheduled but are more accurately known as fixed-base air carriers," Carr said. "These fixed-base carriers," Carr added, "are pioneering a new type of air cargo and passenger service."

According to the opinion of the Institute's members, the CAB's proposed restrictive measures would prohibit solicitation of general business, the advertising of flight information, and presentation of information to the public about services offered. Also, the restrictions would limit the number of flights to ten per month between any two points, restrict such operations to the North American continent, and prohibit all over-water international flights.

In answer to the proposed restrictions, the fixed-base carriers asked for the right to advertise their services and solicit general business. They also demanded the removal of any restrictions on international flights.

The Institute reported fixed-base carriers now operate 529 airline-type airplanes and 5,000 smaller planes in all parts of the country, employ 20,000 people, represent an industry of approximately $350,000,000 in equipment.

43 Airplanes Daily Cited by Aeronca as World's Largest Output

Claiming production of more personal planes than any other concern here or abroad, John W. Friedlander, president of Aeronca Aircraft Corporation, has revealed his company is producing 43 aircraft each working day—an average of one plane every 25 minutes at Aeronca's two factories. The company expects to build 10,000 airplanes during 1946, Friedlander said.

BT's Cut to $200, C-60's Low as $12,500

Price reductions on surplus Vultee BT-13 basic training planes and Lockheed C-60 transports, announced by the War Assets Administration, lowered Vultee prices to $200 and set a flat price of $12,500 on the cargo C-60's and a range of $15,000 to $20,000 for passenger type C-60's. Largest number of BT's are in surplus stocks at Vernon, Texas, where 248 are stored. Others are located as follows: Augusta, Ga., 15; Fort Stockton, Texas, 144; Jackson, Tenn., 24; Oklahoma City, 1; Pine Bluff, Ark., 11; Walnut Ridge, 171; and Wickenburg, Ariz., 194. Fifteen C-60's are still in surplus stocks with 12 stored at Bush Field, Augusta, Ga., and one each at Walnut Ridge, Dos Palos and Ontario, Calif.

THREE HUNDRED AND SIXTY HOCKADAY COME'S are scheduled to be manufactured before the end of the year, according to the Hockaday Aircraft Corporation of Burbank, Calif. Powered by either a Continental or Franklin 125, the two-place personal plane shown above is said to have a top speed of 140 mph. and a cruising speed of 125. Price with the Franklin engine has been set at $3,350 and with the Continental engine at $3,425.

Surplus P-51's and P-38's Dominate Bendix Entries

The Bendix Trophy Race, which opens the National Air Races at Cleveland on August 30, has created such interest that officials are considering limiting the starting field to 50 airplanes. The course this year is Los Angeles to Cleveland with the New York leg eliminated. The event is unlimited as usual. With stripped down P-51's and P-38's predominating on the entry list, Frank Fuller's 1937 record of 7:54:26.3—Los Angeles to Cleveland—is expected to be beaten by hours.

Tentative plans for service participation already include a 25-ship squadron of P-80's, two teams of P-51's and 47's in a simulated combat exhibition, latest helicopters, and B-29's on daily exhibition. The Navy and Marine Corps will each send two crack squadrons to demonstrate precision work.

Hughes Flying Boat Finally Goes to Water

Howard Hughes' gigantic flying boat—which was moved in mid-June from the Culver City plant to Long Beach—is now being assembled at the Long Beach harbor dock for eventual flight test. Built almost entirely of wood, the $20,000,000 plane was moved in sections and the wing and fuselage were moved the 28-mile distance over different routes. Wing sections required a highway width clearance of 55 feet, while the hull section required a height clearance of 40 feet.

Two days were required to move the giant plane. Twenty-three utility companies co-operated in raising and lowering 2,100 individual power and telephone line segments along the way, while 40 police of 10 cities and towns, the state highway patrol and sheriff's office, co-operated in handling the traffic problem. The cost of moving was estimated by company officials at $58,000.

South Gets 5-Unit AAF Air University

The AAF's "Air University"—a gigantic educational undertaking designed to keep Army officers in constant touch with new developments in aviation—is scheduled to begin operation September 3.

Designed on a long-term basis with colleges in Alabama, Florida, and Texas, the Air University will operate directly under the Commanding General of the AAF. Some of the foremost military aviation experts in the United States have been assigned as instructors and, in addition, a "Board of Visitors"—composed of leading educators from all over the United States—will visit the Air University periodically to advise on educational policy.

Designed to develop personnel capable of efficient leadership, the University will consist of five units: Air Command and Staff School and Air War College at Maxwell Field, Ala.; Special Staff School at Craig Field, Selma, Ala.; Communications Course of the Special Staff School at Gunter Field, Montgomery, Ala.; Air Tactical School at Tyndall Field, Panama City, Fla.; and an AAF School of Aviation Medicine to be located at Randolph Field, Texas.

Beech Borrows $4,000,000

A $4,000,000 loan for financing production of current Beechcraft airplanes and proposed new models has been completed between a syndicate of 15 banks and the Beech Aircraft Corporation. The new credit will provide ample working funds to insure an adequate supply of materials and parts on hand, Beech officials explained. Because of strikes and other dislocations, materials have been on short supply and have required heavy commitments well in advance of deliveries to meet production requirements, the officials revealed.

Details of Beech's Model 35, all-metal four-place personal and charter airplane, are expected to be announced shortly. In addition, the corporation is working on a 20-passenger airplane of advanced design for feederline operations out of small airports.

New U. S. Firm to Make British Jets in New Jersey Plant

Rolls-Royce Nene and Derwent jet aircraft engines will be manufactured in the United States by the Taylor Turbine Corporation, an American engineering production group headed by P. B. Taylor of Upper Montclair, N. J., former vice president and general manager of the Wright Aeronautical Corporation. Taylor's firm, operating under a licensing arrangement with the British organization, expects to be in production early in 1947 at a factory in northern New Jersey.

Rolls-Royce jet engines, Taylor pointed out, are the most fully developed, efficient and powerful aircraft power plants available today. At least two American manufacturers are planning new aircraft built around these engines, Taylor declared.

Army Helicopters to Haul Mail in Post Office Department Test

A series of initial tests on use of helicopters for collecting and delivering airmail will be conducted during July and August by the Post Office Department in co-operation with the Army Air Forces. Six AAF Sikorsky helicopters, manned by crews and ground-maintenance personnel of the ATC's Air Rescue Service, will be used in the tests.

Four round-trip flights will be made each day over an inland route to Santa Ana and the same number will be made along a coastal route to Long Beach. One round trip will be made each morning and each afternoon on both routes. The inland route will include 20 stops in a total elapsed time of one hour and 52 minutes. This includes an allowance of one minute at each stop for pickup or delivery. The coastal run will include 16 stops in a total operating time of one hour and 27 minutes with one minute allowed for each stop.

The helicopter is seen by postal officials as a device to give airmail service to all communities in a metropolitan area. The West Coast tests are part of a Post Office Department plan to provide 12-hour airmail service between any two metropolitan communities. If the Los Angeles experiment proves practical, officials declared, the department will urge immediate extension of helicopter airmail service to New York, Chicago, Philadelphia and Boston. As soon as possible, the service will be extended to every metropolitan area.

Electrified Plastic Coating For Windshield Anti-icing

Windshield icing and fogging—long one of aviation's most complex problems—may be solved by a transparent electrically conductive coating developed by the Pittsburgh Plate Glass Company. Identified by the trade mark NESA, the windshield coating is said to combine excellent visual properties with electrical conductivity. The unaided eye can detect no color differential in transmitted light and the visual characterizations are approximately the same as in untreated glass. Development work thus far has been confined to flat NESA glass but the manufacturers believe it will be possible to produce NESA with moderate curvatures.

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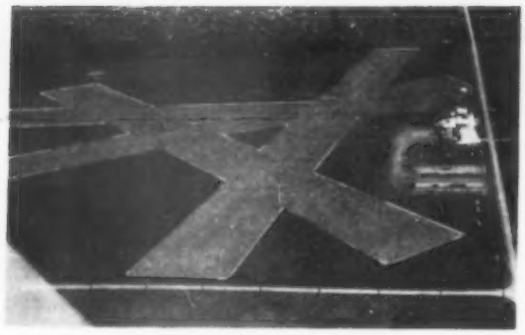

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2,730 Non-Scheduled Carriers Using 5,529 Planes

There are about nine times as many aircraft engaged in non-scheduled operations as are now in use by the scheduled carriers—divided among at least 100 times as many companies. The CAA, releasing these facts in preparing to enforce the new safety regulations for non-scheduled air carriers, revealed there are at least 2,730 non-scheduled operators with 5,529 aircraft.

By actual CAA count, non-scheduled carriers are using 101 Lockheed Lodestars, 13 Curtiss Commandos, 339 Douglas DC-3's, and 76 DC-4's. At least 2,000 smaller twin-engine transports are in operation plus a minimum of 3,000 single-engine transports. In the city of Miami alone, 36 non-scheduled operators have bases while 40 others make charter flights into the city from other bases.

Luscombe Workers On Profit-Sharing Basis

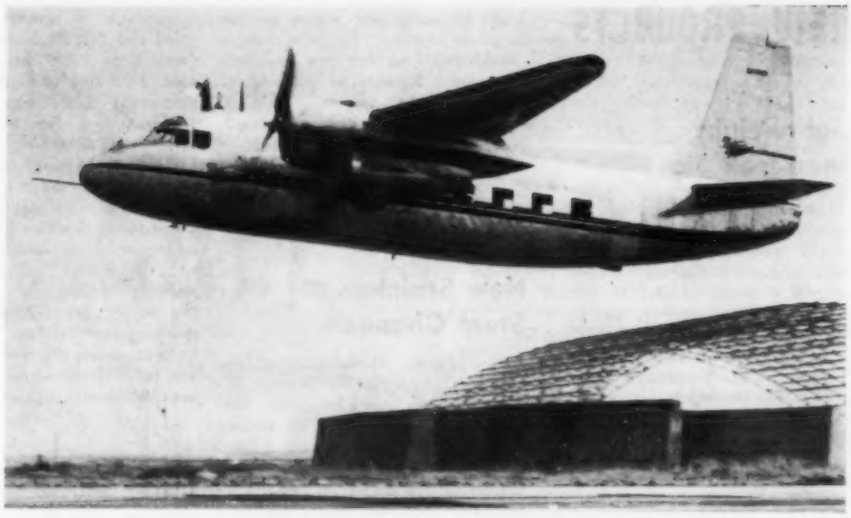
Under a profit-sharing plan announced by the Luscombe Airplane Corporation, employes will receive a third of the company's net profits before federal income taxes are deducted. The unique bonus plan, announced at a meeting of all personnel by President L. H. P. Klotz, becomes effective as of April 1, 1946, and provides for payment to Luscombe personnel of a quarterly bonus.

New Altimeter Device Corrected by Radio

The Square D Company's Kollsman Instrument Division has developed a sensitive altimeter which automatically corrects itself for barometic pressure change as a plane flies within range of special radio transmitters located at ground stations in mountainous regions, at airports and other strategic spots. It automatically cuts out the weaker of several signals when the plane flies within range of more than one ground station, and Kollsman says it will eliminate incorrect readings when air temperatures aloft are unusually high or low.

Northrop Building New 3-Engine Transport Plane

Two highly specialized aircraft—the trimotor Pioneer and the Reporter F-15—are being built by Northrop Aircraft at its Hawthorne, California, plant. The Pioneer, a cargo plane, is designed for heavy-load operation in and out of short fields and is expected to see wide use in the rugged sections of South America and China.



SUCCESSFUL FLIGHT TESTING OF THE NEW TWIN-ENGINE SATURN has been announced by Lockheed Aircraft Corporation. The 200-mph. Saturn can carry 14 passengers or 3,000 lbs. of cargo, is powered by either 800-hp. 7-cylinder Wright Cyclone engines or 600 hp. 9-cylinder Continental engines.

Four Southeast Feeders Recommended; Wiggins Certificated in East

Certificates for four new feeder airlines in the Southeast have been recommended by CAB examiners, who also urged extensions to existing routes. New firms recommended for certificates are Commonwealth Air Transport, Inc., Covington, Ky.; Piedmont Aviation, Inc., Winston-Salem, N. C.; Southern Airways, Birmingham, Ala., and State Airlines, Inc., Charlotte, N. C. . . . A three-year certificate authorizing transportation of persons, property and mail has been issued to E. W. Wiggins Airways, Inc., covering feeder routes in the Northeast. . . . James M. Landis, new CAB chairman, heard his first major case last month during arguments in the Texas-Oklahoma proceedings.

New Transport Orders

Commercial air transport orders announced last month included: Braniff Airways, $10,000,000 in contracts for six Douglas DC-6 sleepers, five DC-4's, twelve Martin 303's. Delta Air Lines, twenty Martin 202's; Northwest Airlines, forty Martin 303's at $10,000,000; Pan American World Airways, twenty Convair 240's at $4,500,000; Panagra, six Martin 303's; Commander Air Lines, six Martin 202's.

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NEW PRODUCTS

Lightweight Snap-lock Jig

Hedstrom Industries, Inc., Chicago, claims to have overcome the weight problem in jig operation with its new "Fetherlite" snap-lock jig. It is made of OH-38 special aluminum alloy and is one-third the weight of steel, making shifting of position easy without tiring the operator. Hand-operated clamp-screws hold the work-piece in place. Lock construction permits instant opening, closing and locking. The jig is easily assembled into 1, 2, 3, or 4-way jig, and everything is ready for locating bushings, clamps and nest. Special sizes are made to specification. Information is available on request.

New 10-in. Slide Rule

The Charles Bruning Company has introduced a new 10-inch slide rule. It is made of plastic material, and the precision graduations are not affected by temperature change. The glass indicator is mounted in a stainless steel frame. The rule has A, B, CI, C, D, K, S, L and T scales to permit the widest possible range of service. The new rule is smooth working for fast and easy operation. Binding or sticking of the slide under varying conditions is eliminated because the rule is all-plastic. The slide rule is similar in construction to the 5-inch pocket slide rule which the company also manufactures.

New Stainless Steel Channels

The Joslyn Manufacturing and Supply Company, Fort Wayne, Indiana, is producing stainless steel channels in addition to its regular lines of stainless steel ingots, billets, bars and shapes. The new product has broad application in metal fabricating. The channels are produced hot-rolled, annealed and pickled in AISI types 302, 304 and 316. Sizes are from ¾"x⅜"x⅛" to 2½"x⅝"x¼" in any length desired. Distribution of the channels is handled through the company's regular factory representatives and salesmen.

New Enclosed Electric Motor

General Electric Company has designed a new enclosed, fan-cooled motor especially for use in dusty, dirty and corrosive atmospheres. It is available in standard, explosion-proof and dust-explosion-proof types from 1 to 1,000 hp. and can be used, according to model, in various locations. The unit is short and compact, and can be installed in a small space, making it suitable for machine tool applications, the motor being part of the machine. Sealed end shields and inside joints, and a one-piece, double-shell stator protect parts from moisture or corrosive elements. Punchings and windings within the inner shell of the motor are cooled by a non-sparking external fan. Low starting current makes the new unit suitable for full-voltage starting with inexpensive control equipment.

5-hp. Motor for Small Space

The Electrical Engineering and Manufacturing Corporation, Los Angeles, has developed a new gear-motor for application where space is limited and where 5 hp. has to be delivered at 8,000 rpm. using commercially available power. The unit has single-reduction helical gears in a sealed gear box. The motor is smaller, lighter and more compact than the conventional un-geared motor. The same design will fit a variety of applications requiring output speeds not ordinarily obtainable with commercial current.

Zipper for Pressure Sealing

The B. F. Goodrich Company has solved the problem of sealing joints on air ducts by the application of the Pressure Sealing Zipper. The product is a combination of rubber with metal fasteners. It makes joint covering simple, and with the Zipper's backing material cemented around the metal duct, a perfect seal is obtained. The Zipper is 100 per cent effective because it goes all the way around the duct joint, and can be applied to kidney shapes as well as circular cross sections.

Ball Bearing Swivel Coupling

The All-Flex ball bearing swivel pipe coupling, being sold by Snyder Sales Corp., Los Angeles, conveys fluids under high pressure through a pipe which swivels or rotates a full 360 degrees. The combination of multiple packings and metallic seals offers protection against leakage at high and low pressures. A double row of ball bearings, plus metal-backed packings, gives the lowest possible resistance to rotation, permitting ease of operation at all pressures. Torque performance tested by aircraft companies shows a torque of 2.5 inch pounds at 1,500 psi and 9.6 inch pounds at 3,000 psi.

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PORTS OF CALL

Dallas, Texas.—*by Vida Foster.* A Lockheed Constellation paid Dallas a visit last week while on an experimental run carrying officials of the American Airlines as passengers. We made a tour of the huge ship and "luxurious" seems such an inadequate word to describe it. Besides, we can't imagine anything that huge flying. It was still on the ground when we left—so we still can't imagine it.

A visit in the instrument shop of Dallas Aero Service reveals unbelieved expansion in these tight times. V. E. Ressler is in charge of the instrument shop.

The way things are shaping up out at Julius Hudson's Highland Park Airport is mighty nice to see. All runways have been black-topped, while construction of buildings continues. The temporary administration building is finished (except the inside) and occupancy is planned by July 15. Jerry Hicks —with the able assistance of his wife, Thelma, as office manager; Ed Tarbutton, sales manager; Al Phillips in charge of the training program, and O. S. Barrow in charge of maintenance—is whipping things into shape and rendering bang-up service. Jerry is the Ercoupe dealer in Dallas. While we were there the Texaco sign painters were working on a nice "Hicks Aviation Service" sign on one end of the big hangar. Both 80 and 91 octane Texaco gas will be available. Henry Stewart, back from the China-Burma-India war theatre, is operating the Park Cities Aero Service and instructing in Piper Cubs. Bill Campbell and Ray Weatherly were busy getting things "squared away" in their new hangar and full operations are expected to be under way by the time you read this.

While on our check flight over the territory we learned that Jimmie Marshall was en route to Wichita to take delivery of the new Culver "V" model. By Woodbury telephoned him it was ready and waiting, having been ATC'd by the CAA under Part 03. Jimmie will be demonstrating this new ship on his almost-finished Marshall's Field airport at Buckner Boulevard and Lake June Road in Dallas, and also "all over the whole State of Texas", according to Jimmie.

Executives of Southwest Airmotive Company at Love Field "hit the road" during June on official trips, one going east, the other south of the border to Mexico. George W. Jalonick, III, vice president and secretary, conferred with factory heads and airport directors on the East Coast concerning long-range municipal planning in the field of aviation. At the Hotel Traymore in Atlantic City, N. J., Jalonick addressed members of the board of directors of the Aviation Distributors and Manufacturers Association. As a member of the directorate, he told his audience that leaders in the aviation industry have a real opportunity to "pioneer efficiency and square-dealing" in their operations.

Currently, E. E. Chapman, Southwest Airmotive's assistant sales manager, is visiting Monterrey and Mexico City to confer with airplane owners and operators concerning private maintenance and overhaul. SAC frequently overhauls planes from Mexico and sells a large volume of parts and accessories to customers from that country.

Out of Bryan comes the news that E. B. "Pop" Gaither is setting up operations on the new field at Handley, Texas. Pop will specialize in repair work and crop dusting.

Kansas City, Mo.—*by Marion Melcher.* The Veterans Administration has announced that thirteen flying schools in this area have been approved for flight training of veterans under the GI bill.

Maybe I'm naive, but I still get a kick out of news items like this: that six seniors at Shawnee Mission high school (just outside of

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KC) used the airplane as the medium to keep two important but conflicting dates. They flew to Wichita to enter the track and field championship held there, and were at the high school on time to attend their own commencement exercises.

A separate department of aviation for the city is being urged here. Most urgent is our need for a larger airfield to accommodate the giant airliners which are here today. . . . WNAA in Kansas City held its second annual Fundesta in June. National President Etta Kushner and three other Topeka members attended the fun-meeting. The floor was so slick for the square dance that the dancers took off their shoes before they "took off". . . . Connie Caraway reports that the Eldon dedication was a huge success. Her husband, Harold, was recently appointed manager of the field. Connie added the woman's touch by selecting the furniture for the airport.

Jackson, Miss.—Seventy-five planes carrying 154 passengers participated in the four-day Mississippi Goodwill Aviation Tour which visited thirteen airports and covered 1,100 miles in early June. Fliers from seven states joined in the junket and represented a total of 27 Mississippi communities.

Gasoline for all tour planes was furnished free by the Standard Oil Company. Thad Ryan, Jackson Swift dealer, was tour director and Frank Wignall, of the Civil Aeronautics Administration, was tour co-ordinator.

Entertainment and hospitality were provided at all tour stops by local Chambers of Commerce, city officials, and aviation enthusiasts. Highlights included a luncheon at Mississippi State College, a dinner at Memphis, a Delta fish fry at Greenville, a dinner at Natchez, a luncheon at Hattiesburg, a tour of the Ingalls Shipyard at Pascagoula, and a buffet supper served in the hangar of the Gulfport Army Air Base airport. Refreshments were also served at Meridian, Grenada, Oxford, Vicksburg and McComb.

Los Angeles, Calif.—*by Tony Hagmann.* At Los Angeles Municipal, the LA *Examiner* blew an air show to their readers which blew the top offen the beer, so to speak. One hundred thousand aviation fans bought tickets for the charity benefit, and all got sunburned clear down to their pockets.

There were P-80's flying like the bat out of Lockheed and so close to the ground everybody ducked, including Tony LaVier, who flew the jobs at Lockheed. Credit should go to Lt. Colonel Felix M. Hardison, March Field, who was proud of his pilots and said so. Piloting the craft were Lt. Col. John C. Herbut, Major Robin Olds (son of General Olds) and Lieutenants Lacey Newman and G. O. Berry. They signed our short snorter.

When the civilian part of the show came along, Archie Twichell got all excited and almost couldn't announce the events, but he managed to thrill the crowd and explain why. Unusual. The radio work was managed by Herb Fielden, of United Air School, who is running a vet training program at Central.

Sammy Mason, veteran stunt pilot, blew the smoke off the stacks with his aerial gymnastics and Al Lary did his drunk act, bouncing the little ol' plane all over the field. Then the Navion flew over piloted by the Puffed Wheatie, and she looks slick in the air. . . . Nadine Ramsey brought in a P-38 . . . and then came LaVier.

The flying Tony, who owns a P-38, flies that thing like the able test pilot he is. His flash across the field was as exciting as the jets, and danged near as fast . . . he made single-engine flights, and did a dead stick landing, which "ain't being done" . . . and his wife, Neva, had fried chicken in the little station wagon.

The Navy and Marines closed the show with an aerial display of their jet Fireballs, which left us weak and willing.

The *Times* had a camera spy at the event who prayed for a picture which would make Pat Hogan, aviation editor of the *Examiner*, load a full bourbon bottle, but the show had not a scratch, except for one little boy who sat on a board box and got a splinter.

The day this was written we took two orders for SF—T. T. Tupman and Carleton

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Darneal. We slickered them into it.

Our old pal at Doak Aircraft, Nelson Grace, got us "press privileges" at the Air Show by socking down $3.00 for our ticket. Doak made the back ends of all the Ryan Fireballs, and we wanted to see from spittin' distance. Next day, however, we used a pass from the *Examiner*, and we think they should be complimented on giving the general public a mighty fine airshow.

Phoenix, Ariz.—*by Marjy Hardman.* You heard about all that work being done just east of the steel hangar—well, Arizona Airways is going to have an airplane wash rack there; also, they have purchased Long Aircraft Service for shop use, so Floyd (Huey) Long tells me.

There have been a couple of changes in the airport office. New assistant airport manager taking Dean Cage's place is Doug Carr—used to be in the Marines. Really sorry to lose Beverly Cone—she was so nice to deal with. Another pleasant girl, Mary Gullian, is holding down Beverly's job now.

You've heard about Quick Dusters, Inc., that new crop dusting company recently organized with "Pappy" Quick as president? They commenced business and are expanding operations. Bob Sanchez, who used to work for Pappy, is with him again. Cliff Crowl and Norman Poteet, who used to instruct at Marsh & Franklin, are also pilots. Stan Baldiga, from Culver City and formerly in ATC, is working on the ground as mechanic. Their new accountant is George Sheppard, a native. Bill Hosmer, vice president of Quick Dusters, is handling the Fairchild agency here for Ryan Aviation Associates, but doesn't have that demonstrator yet.

Mercury Flying Service has a new plan—at least it's new on this field. Beginning April 1, 1946, they issue each employe five shares of common stock of the company for each one-quarter year of continuous service and at the end of the three years the employes become sole owner of the stock earned. That could be a pretty good deal, couldn't it?

That new Cessna is really a wonderful little airplane—everyone seems to like it. Sky Harbor Air Service now has two of them for use in the school and they seem to be very popular. Art Robart, Ernie Pelton and Pappy Knier have a good product to peddle. Art keeps his Cessna demonstrator over at Pylant Field part of the time.

We caught sight of the new Navion, which was through here recently. It really attracted the crowd—as did a P-80 which made an emergency landing here, requiring an engine change. The Cub Super Cruiser came in for its share of attention upon its arrival. Anderson Aviation is the Cub representative on this field, in case you want to fly Cubs in Phoenix.

Airhaven is a busy field these days, too. Walter Bensley, well known here at Sky Harbor, is over there now. He used to instruct at Thunderbird No. 1. Leetate Smith, Arizona State Sales Manager for Commercial Benefit Insurance Company, is flying out there and soloed recently. So did John Marsh, 16-year-old son of a prominent Sky Harborite. Other Phoenicians who soloed there recently were E. V. Lister, Lister Real Estate Co. agent; Al Dobson, City Transit Co., Paul Gardner, with the same company and Glenn H. Shay, a Phoenix rancher. There were two Glendale, Arizona, fellows who soloed, too—Carl Vinning and Edward E. Cole. Solos under the G. I. Bill of Rights program were Worth W. Hunt, William C. Souther, W. C. Creighton, Doyle Thornton and James E. Jarrell, all of Phoenix and C. G. "Tiny" Brown, of Tolleson, Arizona. Merton Daniel and Frank Hobson, private students from Phoenix, received their private tickets, as did J. D. Conner, of Peoria.

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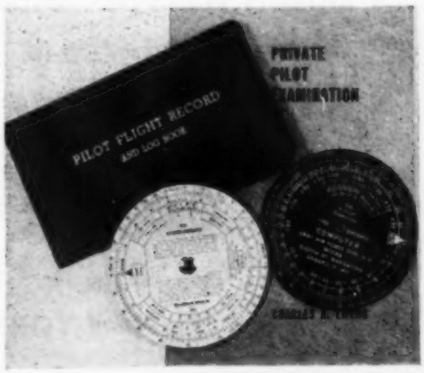

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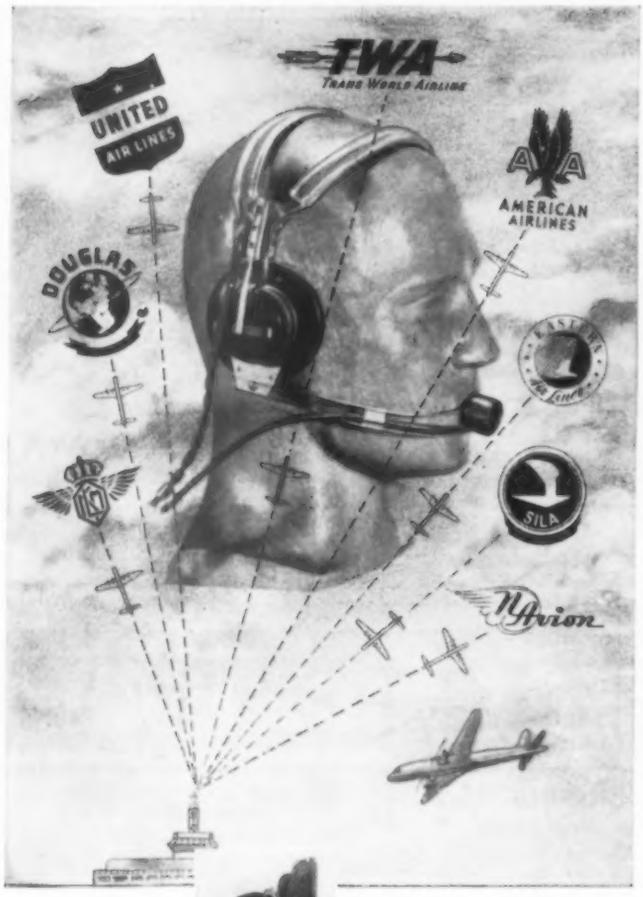

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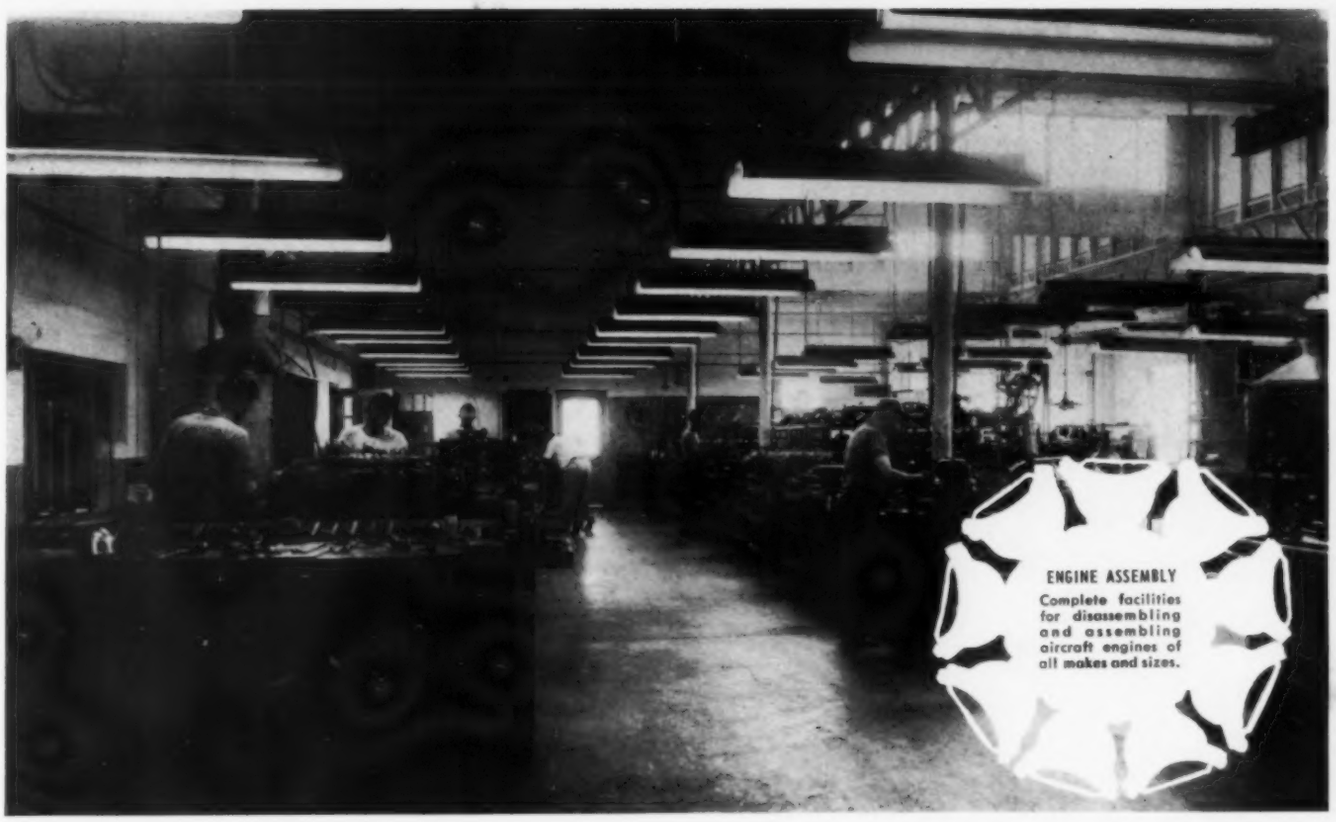

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